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THE AMERICAN NEPTUNE

A QUARTERLY JOURNAL OF MARITIME HISTORY

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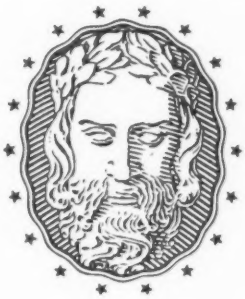
A Quarterly Journal  *of Maritime History*

VOLUME XV JULY 1955 NUMBER 3

AT *nearly opposite ends of the English speaking world, two more old windjammers are in the process of joining that growing fleet of vessels on public display.*

Long subscribers to NEPTUNE *may recall the article in Volume IV by Harold D. Huycke, on 'The Ship* Pacific Queen.' *In the closing remarks of his excellent history of this vessel, Mr. Huycke speculated on how much longer she would be in the land of the living. Apparently it will be a good deal longer than he had any reason to hope; for about a year ago she was acquired by the San Francisco Marine Museum, and authorities there expect her to be ready for visitors this summer.*

Pacific Queen *is a steel-hulled ship built in Scotland in* 1886. *She was originally named* Balclutha *but in* 1906 *she was purchased by the Alaska Packers Association and her name changed to* Star of Alaska. *From that time until* 1930, *as one of the famous Star fleet, she went North nearly every year with supplies for the canneries and returned to San Francisco with canned salmon. In the mid-thirties, then named* Pacific Queen, *she became another kind of star—in moving pictures, appearing as Captain Bligh's famous ship in 'Mutiny on the* Bounty.'

Meanwhile in a dry dock on the Thames River near Greenwich Naval College, the famous English tea clipper Cutty Sark *has arrived at her*

last berth. Here it is planned to restore her to her former glory as a tribute to men and ships of the wooden sailing merchant marine of Great Britain. A Cutty Sark *Preservation Society has been formed under the patronage of the Duke of Edinburgh, funds are being raised for rigging and refitting her in nineteenth-century style, and she is expected to be ready to receive visitors in* 1956. *After her maintenance is provided for, it is intended to use any other money obtained to aid in training merchant seamen through* Cutty Sark *scholarships.*

Despite our own pessimism on the subject of indefinite preservation of old ships, we wish both of these projects every success.

Alexander Crosby Brown sends on a final news item from Newport News, which is a sad one. Thomas C. Skinner's death on 10 March *brought to an end his singularly useful career as a marine artist. His murals at the Mariners' Museum of modern steel shipbuilding form a splendid record. Particularly significant has been his series of contemporary paintings executed with spirit and color of Newport News-built aircraft carriers. So rapid has been the development of this important ship-type that Tom Skinner was able to record on canvas all from the pioneer* 1934 Ranger (*CV-*3), *first carrier so designed and built from the keel up, through the first* Yorktown, Enterprise, Hornet, Essex *and others of this class, to the giant post-World War II carriers* Midway *and* Coral Sea. *Among other unfinished works, it is only natural that there exists a Skinner painting of the super-carrier* Forrestal *launched by the Newport News Shipbuilding and Dry Dock Company* 11 *December* 1954.

This and more comprises the fine record of a good and thoroughly modest man.

ERNEST S. DODGE

Peabody Museum of Salem

Shipbuilding on the St. Croix

BY HAROLD DAVIS

ONE of the most interesting of the smaller shipbuilding areas down East was the St. Croix valley and the Passamaquoddy Bay region. The easternmost section of the international boundary between Maine and New Brunswick follows the western channel into and through Passamaquoddy Bay and runs on up the St. Croix River to its eastern source. Around the bay and on some of the larger bay islands there are a number of towns which have been fishing centers since the days of early settlement. Most important of these are Eastport, Maine, on Moose Island; Lubec, Maine, to the westward on a peninsula; and on the New Brunswick side Campobello Island, Deer Island, and St. Andrews. Perry and Robbinston, on the Maine side of the bay near the mouth of the river, and, to a much greater degree, Calais, Maine, and St. Stephen, New Brunswick, at the head of the tide on the St. Croix were active lumbering centers.

Shipbuilding was carried on in the St. Croix area from about 1784 or 1785 when the first small vessel was built at St. Andrews[1] until 1891 when Calais launched the trim three-masted schooner *Vila y Hermano,* 311 tons.[2] Activities got underway slowly in the last years of the eighteenth century and were on the increase until interrupted by the War of 1812. The ship *Sagadahock,* about 350 tons, was launched in Robbinston by master builder Joshua Briggs for the town's proprietor E. H. Robbins just before the outbreak of the war. After some difficulty she received a pass from the Vice-Admiral at Halifax and proceeded to Boston with a cargo

[1] In the accounts of David Eastman of St. Andrews for 1784 there are several small charges for spars and ship timber against the estate of Robert Pagan. These may of course have been for repairs, or the spars and timber may have been exported to England. However, Pagan was building vessels at an early date. Charlotte County Deeds, Leases, etc. Folder 76. New Brunswick Museum, St. John, N. B.

[2] 311 tons: 133 x 31½ x 10½, classed A1 for 15 years. Built by Rideout and Lord of Calais for the West India trade. Owned principally in Newport, R. I. Commander, Capt. John Clark of Perry. Run down by a steamer and sunk on 8 September 1905 on passage from Havana to Pasagonia, Florida.

of bricks and lumber.[3] Soon after the war shipbuilding was resumed with considerable vigor, though it was not until the 1820's that the industry became a major one. With certain local variations it followed the pattern set in the larger United States and British North American centers. In some respects, however, the international boundary created an unusual situation. From the beginning relations of the border residents, with a few exceptions, have been cordial. The War of 1812 and the Aroostook troubles of the late 1830's did not disturb things greatly. There was much coming and going and much intermingling. For some of the business community, particularly the lumbermen, who could do a bit of smuggling and in various other ways could get around tariffs and border restrictions and thus take advantage of favorable market conditions of either side, the boundary was a distinct asset. Shippers and shipbuilders likewise were well situated to gain an advantage over competitors elsewhere. However, there were occasions when local builders on either side of the line felt envious of their neighbors across the border. Until 1833 the British West India trade was closed to American vessels much of the time. This was fine for St. Andrews, St. Stephen, and other New Brunswick and Nova Scotia ports, but was not very helpful to the Maine towns of Calais, Eastport, and Robbinston. Within a few years after 1833, when it was opened to Americans, the British West India trade underwent a severe decline from which it never recovered. The British Navigation Acts, which were repealed in 1849, closed the British colonial trade to foreign vessels and prevented the purchase of foreign vessels by British shippers. On the other hand America's coastwise carrying trade was closed to outsiders, and the sale and registry of foreign vessels in the United States was prohibited. The effects of all this were somewhat confining. However, for those on the New Brunswick side there were the fisheries, the timber trade with Britain, and, for a time, the British West India trade.

For the Americans likewise there were the fisheries,[4] lumber to be carried, and a growing demand for vessels in the larger maritime centers. Despite the fact that for many years Britishers sneered at colonial vessels and dubbed them 'leather ships,' 'sailors' coffins,' and 'slop or cabbage stick built,' St. Andrews and St. Stephen builders along with other mari-

[3] Joshua Briggs to E. H. Robbins, Robbinston, 5 March and 16 September 1812. J. M. Robbins Papers, Massachusetts Historical Society. Mary Vose, of Robbinston, paper written in 1873 and published in *Eastport Sentinel*, 8 April 1891.

[4] From the days of early settlement until well after the close of the regular shipbuilding era many small fishing vessels were built on Passamaquoddy Bay and along the St. Croix. The famous Quoddy boat (or Lubec carry-away boat) a little vessel once used extensively by fishermen may well have had its origin here. See David Cabot, 'The New England Double Enders,' THE AMERICAN NEPTUNE, XII (1952), 123-141.

times did considerable building for the mother country.[5] At first the quality of British North American vessels was low, but they were cheap, and as time went on they improved. The repeal of the British Navigation Acts made it possible for British shippers to purchase foreign vessels. This added competition doubtless led colonial shipbuilders to try to improve their vessels. Then, from the early fifties on, a Lloyds surveyor resided in New Brunswick, and all large vessels on the stocks were under his supervision.[6]

Well before the repeal of the Navigation Acts, however, there were some New Brunswick shipbuilders who tried hard to turn out a good product. In 1833 John N. M. Brewer of Robbinston launched the ship *Ava* (460 tons: 118 x 29 x 20) at the Brandy Cove yard in St. Andrews for the merchant James Douglas.[7] The latter wrote that he had taken such great pains with his vessel that he regretted the necessity to sell her.[8] But because of a 'Temporary want of money' he turned his ship over to the Liverpool brokers, Gibbs, Bright and Co., to sell for £4,000. For a figurehead *Ava* had a bust of Sir Archibald Campbell of New Brunswick. This was the work of a St. John wood carver.[9]

Colonial merchants and shipbuilders often helped to meet their balances in Great Britain by the sale of vessels. In 1792 Patrick Campbell after visiting St. Andrews and vicinity took passage home to Greenock, Scotland, aboard *Friendship*, a 230-ton brig laden with lumber. This vessel had been built recently at St. Andrews by Colin Campbell, one of the town's leading merchants, at the request of his creditors and for their use.[10] Patrick Campbell noted that

> This small town is in its infancy; yet has a smart trade in shipbuilding, lumber, and fish, of which Mr. Robert Pagan, a Scotchman, is the life and soul. To his activity and enterprising spirit his country is indebted for this colony. He built this year, besides other vessels, one of four hundred tons, copper bottomed, that has ten state rooms, intended for the West India trade to London. This ship, as well as others built here is of black birch.[11]

[5] Hugh Murray, *An Historical and Descriptive Account of British America* (2 vols., Edinburgh, 1839), II, 249. *British Parliamentary Papers Reports; Committees*, Vol. XIX, 'Report from the Select Committee on Timber Duties,' (1835), p. 94.

[6] M. H. Perley, *A Hand-Book of Information for Emigrants to New Brunswick* (London, 1857), pp. 43-44.

[7] St. Andrews Ships Register, Vol. 112.

[8] Douglas to Charles Ward of St. John, 16 April 1833. Charles Ward Papers, New Brunswick Museum, St. John, N. B.

[9] Douglas to Ward, 7 October 1832. Some years later Douglas moved to Liverpool where he set up as a commission merchant in the colonial trade.

[10] Patrick Campbell, *Travels in the Interior Parts of North America in the Years 1791 and 1792*, edited by H. H. Langton (Toronto, 1937), p. 294.

[11] Ibid., p. 299.

The St. Andrews district continued to turn out vessels for the mother country. In 1825 eighteen, totaling 4,472 tons and valued at £57,000, were built for British shipowners or for sale as remittances, and the next year fourteen of 3,676 tons with a value of £36,750 were sent over.[12] Then for the next twelve years shipbuilding in the district fell off sharply. In 1838 there was a revival, and things continued briskly through 1849. The fifties were bad years, but again there was a pickup during America's war between the states. Another bad slump followed with only a partial revival in the seventies, and this marked the end of shipbuilding on the New Brunswick side of the St. Croix. During most of these years, good and bad alike, one or more ships or barques were built annually for sale in Great Britain. Many smaller vessels and many boats were also built, and as the years went on much tonnage came to be owned locally.

Border restrictions had little effect on ship timber and did not prevent altogether the movement of building supplies, and of course workmen crossed the line freely. Until the 1830's there was greater activity at St. Andrews and St. Stephen than there was on the American side. In the *Eastport Sentinel* of 24 July 1824 Joshua Briggs of Robbinston was advertising for ship carpenters for the yard of Christopher Scott of St. Andrews where Briggs, at the time, was the master builder.

Timber for one of St. Stephen's first vessels was said to have been brought across on the ice from Calais in the winter of 1799-1800.[13] Robbinston and Perry, Maine, in the early days supplied St. Andrews, just across the bay, with some of her ship timber, and some of Robbinston's lumber was rafted across for shipment to Britain or to the British West Indies.[14]

Over the years a number of energetic shipbuilders had yards on both sides of the border. The master shipbuilder Caleb Stetson, who came down from Situate, Massachusetts, and in 1800 built Robbinston's first vessel, did considerable work in St. Andrews.[15] Thomas Vose of Robbinston built on both sides of the river. More important, probably, were Joshua Briggs, originally of Braintree, Massachusetts, and John Nehemiah Marks Brewer. Briggs came to Robbinston about 1812 and during a period of more than thirty years built many vessels there and at St. Andrews.[16] Much of the time he was associated with Brewer as partner and master builder. Brewer ranked among the leading shipbuilders of

12 Customs Returns, St. Andrews, 1825 and subsequent years. *Legislative Journals of New Brunswick.*

13 'Reminiscences of the Early Settlement of St. Stephen,' *St. Croix Courier*, 17 April 1868.

14 *Eastport Sentinel*, 4 April 1877 and 3 May 1896.

15 Ibid., 8 April 1891.

16 Ibid.

eastern Maine and New Brunswick.[17] His father, General John Brewer, an early settler of Robbinston, and his grandfather, the New Brunswick loyalist leader Col. Nehemiah Marks of St. Stephen, were men of considerable prominence. J. N. M. Brewer, described by a younger contemporary as a waggish, jovial, rattle-brained fellow of great industry and energy who had not been reared to any profession or occupation, was active from the early twenties to the fifties. He operated shipyards in Robbinston and at Brandy Cove in St. Andrews and turned out, in all, about a hundred vessels ranging from small schooners and brigs to ships of over a thousand tons. Many of his larger vessels were built in St. Andrews and were sold in Great Britain.[18] Sometimes he built for St. Andrews merchants such as James Douglas or Christopher Scott who handled the sales themselves usually through Liverpool brokers. On other occasions he handled matters directly with the Liverpool operators or through his brother-in-law, Col. Nehemiah Marks, of St. Stephen. Sometimes the vessel's captain was authorized to act as agent for the sale. Often the new vessels loaded a cargo of timber or proceeded in ballast to a southern port such as Savannah or New Orleans where they picked up a load of cotton for Liverpool. Brewer's Robbinston vessels often found sale in Boston or New York which were the principal purchasers of down-East vessels, though some were owned locally. Brewer lived grandly, but like many of his fellow shipbuilders he died almost penniless. He went into debt heavily at times, and apparently drew on his Liverpool brokers. Not infrequently the entire proceeds from the sale of a vessel went to meet the demand of creditors. Brewer's fellow townsman Thomas Vose and some of his associates had similar difficulties. One situation was described by the Robbinston diarist Richard V. Hayden in his entries for 12 and 14 November 1851.

> Peter T. Vose launched the ship *Mary Green* [555 tons] built by him and owned by Goodenow, Pike and others of Calais—the steamboat *Nequassett* hitched to the ship and towed her off toward Calais—the wind and tide are against her as she moves slow—There was a party came down in the steamboat from Calais. . . .
>
> Quite a number of the creditors that held lien claims against the new ship *Mary Green* built by Peter T. Vose and launched on the 12th Inst. were at Calais to get the claims settled—They first took notes of the owners payable in 60 days—but the most of them gave up the notes and took money at 4 percent discount and the money was mostly if not entirely paid in sovereigns.[19]

[17] Ibid. and James S. Pike, Biographical Sketches of John N. M. Brewer and other leading personalities on the St. Croix, James S. Pike Papers, Calais Free Library, Calais, Maine (manuscript).

[18] St. Andrews Ships Register, Vols. 111-177; and Richard V. Hayden, of Robbinston, Maine, Diaries, 1824-1862, Calais Free Library (manuscript).

[19] Ibid.

Robbinston, where the population reached its peaked of 1,100 in 1860, was a remarkable shipbuilding town. During the boom years of the 1840's and 1850's it had several shipyards which turned out a number of vessels annually, and it enjoyed a modest revival in the sixties and seventies.[20] It was Brewer who launched the 300-ton *Carbon*, a 'three-masted brig,' in 1851. On 18 February 1853, *Carbon* with her barkentine rig caused a mild sensation when she appeared at Boston from the California coast. Perhaps she was the first barkentine, since the *Calais Advertiser* of 29 January 1852 indicates clearly that she was built with three masts. Captain Cutler, in *Greyhounds of the Sea*, suggested that she might have been demasted on her voyage around the Horn and rerigged by her master, Captain John Volpey.[21] James M. Cox, another famous Robbinston builder, launched the clipper *Red Gauntlet* (1,038 tons: 178 x 35.6 x 22) in 1853. The ship was named for the grim hero of one of Scott's Waverley Novels. In 1854, under Captain Thomas Andrews, *Red Gauntlet* made the passage from Boston to San Francisco around the Horn in 120 days.[22] She was owned by Cox and by Francis Boyd and Company of Boston and saw much service in the Liverpool trade. Like many other down-East vessels she was a casualty of the Civil War. In 1862 she was captured and burned by the Confederate raider *Florida*. In this respect Cox was very unlucky. Another of his ships, *Dictator* (1,293 tons: 189 x 38.5 x 23.8), which was built in 1854 and was owned by Samuel Train of Medford, Massachusetts, was burned by *Georgia* in April 1863.[23]

Between 1797 and the 1870's Eastport, down on Moose Island, turned out many vessels. Her most notable builder, Caleb S. Huston, was active for over thirty years, and was one of the few on the St. Croix to survive the financial crisis of the 1850's.[24] Huston's outstanding vessel was *Grey Feather* (586 tons: 138 x 30 x 19) whose lines approached those of clippers.[25] She was owned in New York from which port under her famous skipper, Captain Daniel McLaughlin of Grand Manan, New Brunswick, she made several trips around the Horn to San Francisco and did service in the China and India trades. Her best time from New York to San Francisco around the Horn was 126 days (cleared New York 4 November

20 *Eastport Sentinel*, 4 April 1877, 8 April 1891, and 3 May 1896.

21 C. C. Cutler, *Greyhounds of the Sea* (New York and London, 1930), pp. 246, 386n.

22 Ibid., p. 496.

23 Ibid., p. 441.

24 *Eastport Sentinel*, 10 September 1873 and April 1891. Huston was the maternal grandson and namesake of Caleb Stetson, the Robbinston shipbuilder.

25 On *Grey Feather* see *Frontier Journal*, Calais, 29 January 1851; Frederick C. Mathews, *American Merchant Ships* (Salem, 1930), pp. 139-142; and Cutler, op. cit., pp. 157, 175-177, 302, 314, 486, and 513. An oil painting of *Grey Feather*, by Walter Francis, of San Francisco is reproduced in Mathews.

1852, arrived San Francisco 15 March 1853), and on another occasion she made the passage between New York and Melbourne, Australia, in 84 days. In 1861 she was sold to Ruget Brothers in Bremen and her name changed to *Ida*.[26]

St. Andrews, settled principally by loyalists immediately after the American Revolution, enjoyed a period of early prosperity, but slipped rapidly after the opening of the British West India trade to Americans in 1833 and as a result of the general decline of the British West Indies. Other factors were her sparsely settled hinterland, the fact that she was overshadowed by the much larger port of St. John sixty miles to the eastward, and the movement of the center of lumbering activity upriver to the fall line of St. Stephen and Calais. With the decline of St. Andrews shipbuilding in the 1850's and 1860's a number of shipbuilders went upriver to St. Stephen and eventually some of these crossed the border to Calais.

Calais, Maine, and St. Stephen, New Brunswick, are located opposite one another at the head of tide on the St. Croix. Their relations, in every respect, have been very close. For over a century they were important lumber manufacturing centers. Jarius Keen, of Calais, one of the first of the shipbuilders was active from 1803 until the early thirties, building many brigs and schooners on both sides of the line.[27] From the 1830's until the early 1850's the brothers George M., James, Joseph, and William Porter had shipyards and built a considerable number of vessels on either side of the border.[28] The largest, the ship *Break O' Day* (1,762 tons O.M.), was launched from Calais in 1853. She carried a substantial load of lumber to Liverpool where she was sold.[29] Liverpool, of course, had been and continued to be the principal market for larger St. Andrews and St. Stephen vessels for many years, but now, with the repeal of the Navigation Acts United States vessels could be sold there also. At this particular moment building costs must have been less in Calais than in St. Stephen.

The building operations of the Porters were usually directed by the brothers Owen B. and William Hinds whose father, Owen, senior, many years before had come from Middleboro, Massachusetts, to Hallowell, Maine, on the Kennebec, where he had built vessels.[30] In the 1820's he had moved to the Ledge, just below St. Stephen where he continued his ship-

[26] Register of American Lloyds, 1864.

[27] I. C. Knowlton, *Annals of Calais, Maine and St. Stephen, New Brunswick* (Calais, 1875), pp. 161-162; *Calais Times*, 9 July 1885.

[28] Pike, Biographical Sketches; *Calais Times*, 28 June 1894, Obituary of George M. Porter; St. Andrews Ships Register, Vols. 112-117.

[29] *Frontier Journal*, Calais, 9 November, and *Eastport Sentinel*, 21 December 1853.

[30] *Calais Times*, 19 May 1904 and *Calais Advertiser*, 24 December 1913.

building activities. His son William, as a young man, had worked in the St. Andrews shipyards, had then moved up to St. Stephen, and finally, in 1850, had gone over to Calais where he was joined later by his brother. In time they acquired their own yard where they were active until the close of the era. In 1852 the Hinds brothers, for the Porters, turned out a notable (or notorious) vessel in the latters' Calais yard. The *Calais Advertiser* of 3 June 1852 described her as follows:

> A fine clipper-built bark of 436 tons burthen, was launched from the ship yard of the Messrs Porters, on Wednesday last: Master Hiands [*sic*], builder. She is called the 'Arabian,' and is calculated to do some tall sailing. She is painted black from stem to stern, alow and aloft, and looks very much like that 'long, low, black, piratical craft,' 'we read of.' On the whole she is said to be as fine a vessel as was ever launched on this river.

If the stories about her are true *Arabian* (436 tons: 122′7″ x 27′ 3″ x 14′ 4″) was a remarkable vessel.[31] She was acquired by one Thomas M. Mayhew of New York, and on her way there she met and sailed through a fleet of yachts traveling in the same direction. Word of this got about, and she was purchased for $20,000 by Cuban parties, fitted out as a slaver, and renamed *Caribbee*. She sailed to Africa but arrived at the wrong season and found too few slaves to make a cargo. Then she recrossed the Atlantic to the northern coast of Brazil where she pulled in to one of the many coastal islands. Here friendly relations were established with the Negro residents many of whom were lured aboard, wined, dined, drugged, and seized. So many were 'caught' that a considerable number, for whom there was no room in the hold, were thrown overboard. *Caribbee* then made sail for Cuba. On her way she was chased by a British war vessel, and her officers and crew, in desperation, sawed part way through some of the beams to give her greater play. The pursuer was outdistanced, and *Caribbee* reached her home port of Cardenas, Cuba. Here the 1,200 captives were removed and the vessel towed out to sea and burned. The owners, it was said, cleared $1,200,000 on the voyage.

[31] The story of *Arabian* is told by Thomas S. Briggs, 'The Cruise of the Caribbee,' *Harpers' Monthly Magazine*, CXVI, No. 691 (Dec. 1907), 16-28. Briggs, a member of the Robbinston shipbuilding family, went to sea as a young man, probably as a supercargo. Information from Robert Golding, of Perry, Maine. In his later years he lived in Robbinston as a violin maker. His story of the *Caribbee* was circulated in typescript for at least two years before publication. The vessel is described in the *New York Marine Register* of 1859 where it is stated that her captain was one Chevalier, that she was sold in Spain, and that she was surveyed in December 1852. *Arabian*'s first document, Temporary Register No. 40, was issued at Passamaquoddy (Eastport), Maine, on 15 June 1852. Thomas M. Mayhew of New York City was listed as owner and E. D. Veasley of Calais as master. The next document, Permanent Register No. 404, was issued at New York on 11 September 1852. John C. Stocker of New York was listed as owner and John I. Mirrow as master. The master Abstract of Registers states that Register No. 404 was surrendered at New York on 19 October 1852 and that the vessel was sold to foreigners. The Industrial Records Branch of the National Archives have been unable to find any bills of sales of other records. The writer is indebted to Morris Rieger of the National Archives for most of the above information.

At about this time the California gold rush was proving a great boon to down-East shippers and shipbuilders. There was a great demand for lumber on the west coast; many cargoes were shipped, and all vessels which had the space carried a great number of passengers. So many people from the St. Croix region emigrated that for many years the *St. Croix Courier* of St. Stephen ran weekly dispatches of California news.

Over a few miles to the westward at Machias, Maine, enterprising lumbermen dismantled and shipped an entire lumber mill to Puget Sound.[32] At St. Stephen, in 1850, the shipbuilder David Eastman bought the 120-ton, stern-wheel steamer, *S. B. Wheeler*, which had been operating on the river for a few months, and then built the hull of the barque *Fanny* (707 tons: 147 x 30 x 17) which was launched without decks and sunk in deep water.[33] *Wheeler*'s engines and gear were removed, and the little steamer's empty hull was then floated over *Fanny* which was raised in such a manner that she caught the steamer. *Fanny* was decked and rigged, and on 24 July 1850 the *Calais Advertiser* reported that 'she is now lying in the river with the steamer in her, stowed as snug as a pea in a pod.' Besides *Wheeler*, *Fanny* carried over fifty passengers including four ladies. *Fanny* went around the Horn to San Francisco and from there to Berincia where she was dismantled and sunk and *Wheeler* refloated. For some years the steamer operated between San Francisco and Stockton and then was sold in Mexico. *Fanny*, raised and rerigged, saw service in the Australian trade before she was lost somewhere in the Pacific.

Oliver B. Rideout was another shipbuilder who started in St. Andrews, moved upriver to St. Stephen, and finally, during the Civil War crossed over to Calais where he continued to build vessels for many years.[34]

Perhaps the most notable of the later builders at the head of tide were the brothers John and Charles Short. Like several of the others they got their start in St. Andrews and then moved to St. Stephen.[35] Here, in the years between the early sixties and the late seventies, they built a number of ships and large barques for the firm of Chipman and Bolton. Most of these were sold in Great Britain, and several entered the cotton trade between southern United States and Liverpool. The Liverpool sales were handled frequently by J. S. DeWolf and Company, commission merchants and ships brokers who had connections in St. John, New Bruns-

[32] Edwin T. Coman, Jr., and Helen M. Gibbs, *Time, Tide, and Timber* (Stanford University Press, Stanford, 1949).

[33] *Calais Advertiser*, 5 June, 24 July, 30 October 1850; *Frontier Journal*, 18 December 1850; Jerry MacMullen, *Paddle-Wheel Days in California* (Stanford University Press, 1945), p. 15; St. Andrews Ships Register, Vol. 115, p. 128.

[34] *Calais Times*, 10 April 1890.

[35] Information from various issues of the *Calais Advertiser*, *Calais Times*, *St. Croix Courier*, and the St. Andrews Ships Register.

wick.[36] In 1865 the Shorts opened a yard of their own in Calais where they were active until the late seventies. Most of their Calais vessels were smaller than those built in St. Stephen for Chipman and Bolton. From the sixties until the close of the era Calais had several shipyards and turned out schooners and some respectable barques for the coastal and West India trades. With a single exception, these were the types of vessels built by the Shorts in Calais. The exception was *Annie H. Smith* (1,452 tons: 220 x 40 x 24) built in 1876-1877.[37] This was the only ship built on the American side of the river since the collapse of the great shipbuilding boom of the fifties.[38]

On the New Brunswick side the pattern differs. St. Andrews was most active in the middle twenties and in the forties. Her last ship, *Lady Milton* (902 tons: 162 x 35 x 22) was built by Edward Wilson in 1856 and sold to Liverpool the following year.[39] Good-sized barques and smaller vessels continued to be built in St. Andrews until the middle sixties. At St. Stephen the busy periods were the thirties and forties; a lull followed, and then there was considerable activity from 1861 until 1878.

After the great shipbuilding days of the 1850's there was considerable difference in the types of vessels turned out on the two sides of the river. On the United States side they were nearly all barques and schooners. These were still in demand for the coasting, gulf, and West India trades. The St. Croix yards on the Maine side were well equipped to supply such vessels. Building costs were fairly low. On 2 December 1862 the *Calais Advertiser* reported that a master builder, sent down from Boothbay to look over local shipbuilding facilities, had decided that vessels could be had more cheaply in Calais than in Boothbay or in any other place east of Boston. Thus St. Croix shipbuilders did much work for those whom the local newspapers called 'western' owners. ('Western' usually meant Boston or New York.) Details on shipbuilding on the St. Croix are difficult to find. On 17 February 1866, the *St. Croix Courier* of St. Stephen, which gave much attention to shipping, estimated that $100,000 was invested in shipyards and implements on the St. Croix and perhaps $800,000 in shipping tonnage. Much of this latter was in small vessels which operated profitably for their owners.

On the American side some builders launched as many as three or four

[36] St. Andrews Ships Register. Frederick William Wallace, *Wooden Ships and Iron Men* (London, 1924), pp. 71-74, 236-259. *St. Croix Courier*, 9 June and 13 October 1870.

[37] *Calais Advertiser*, 3 January 1877; *Eastport Sentinel*, 1 November 1893; Register of American Lloyds, 1879.

[38] In the sixties and seventies two or three ships were built in Pembroke a little to the westward.

[39] St. Andrews Ships Register, Vol. 112.

vessels a year. In 1850 Caleb Huston, of Eastport, with a capital investment of about $10,000 employed thirty-five men and built four vessels with a total tonnage of 1,200 and a value of $36,000.[40] Jacob Shackford, of Eastport, with a $7,000 investment and twelve employees launched three totaling 500 tons which were assessed at $14,000. In Calais in 1850 the Porters of St. Stephen employed fifty-five men on a 1,200-ton ship worth about $45,000. Figures for 1860 and 1870 are far less complete, but they indicate about the same pattern. According to Henry Hall's 'Report on the Shipbuilding Industry of the United States' (1880) building costs on the American side ranged from $24 to more than $45 per registered ton, and local taxation amounted to about 2½ per cent annually.[41] Data on the costs of building specific St. Croix vessels are rare. The three-masted schooner *Marcia Reynolds*, 297 tons, was built at Lubec by Langmaid and Mugford in 1871 at a cost of $21,000.[42] The schooner *Mary F. Pike*, 160 tons, was launched from Potter's yard in Perry in 1872.[43] Half of her shares were owned at Lubec and half at Perry and Calais. The contract price of $45 per ton proved insufficient to pay all of the costs, and her owners were called upon to meet the additional charges. The three-masted schooner *Lahainia*, 300 tons, launched at Lubec in 1874 cost $22,000.[44] Three-fourths of her shares were owned in Lubec, and the others were widely distributed. The *Calais Advertiser* of 19 May 1875 announced a serious loss. 'By a dispatch to the owners we learn that the schooner *Annie K. Eaton* [275 tons], Capt. Stanley, of Calais, is ashore on Block Island. She is only one year old—three-masted—not insured. At last accounts she was being stripped of her rigging, anchors, etc. She cost $17,000.'

The *St. Croix Courier* of 24 January 1868 stated that the cost of shipbuilding in the United States was much greater than in the British provinces, where it was claimed that labor and materials were much less. It was estimated that a St. John ship of 1,000 tons cost $45,000 in gold while in Maine the same vessel could not be had for less than $85,000. This was probably an exaggeration. Along the border, certainly, where both labor and timber moved freely back and forth there could have been no such difference. It is true that United States registration laws prevented the British Maritime Provinces from turning out moderate-sized vessels for

[40] Census of 1850, 'Products of Industry,' Office of County Commissioners, Machias, Maine (manuscript).

[41] *Tenth Census of the United States*, 1880.

[42] *Eastport Sentinel*, 27 December 1871.

[43] Ibid., 21 August 1872.

[44] Ibid., 21 January 1879.

such ports as Boston and New York and in this respect afforded Maine shipyards considerable protection. United States duties on many of the shipbuilding materials imported from Great Britain added substantially to building costs in the states. Congressman Frederick A. Pike, of Calais, who worked hard to get the duties repealed, published an itemized list of these added charges involved in the building of a 750-ton vessel. He stated that the list had been given to him in 1865 by one of his shipbuilding constituents in eastern Maine.

76,620 lbs. iron 1¢ per lb.	$766.20
6,200 lbs. spikes 2½¢ per lb.	150.00
1,500 lbs. galvanized spikes	37.50
9,000 lbs. castings	135.00
32,363 lbs. chain cable at 2½¢ per lb.	809.00
7,068 lbs. anchors at 2¼¢ per lb.	159.00
1,114 lbs. clinch rings 2¢ per lb.	22.28
16,990 lbs. hemp cordage 3¢ per lb.	509.70
7,535 lbs. manilla " 2½¢ per lb.	188.37
12,261 lbs. yellow metal for sheathing	367.82
5,180 yards duck	500.00
860 bu. salt at 18¢ per bu.	116.00
oil, lead, copper, bolts, nails, and paint	175.00
Sundry smaller items	589.90
	$4,531.14

[*St. Croix Courier*, 24 January 1868]

Some of the shipbuilders on the American side of the St. Croix got around these restrictions partially by smuggling. Naturally evidence of this is scarce, but on 25 August 1846 the *Frontier Journal*, of Calais, accused an important shipbuilder on the American side who purchased his iron and spikes in New Brunswick of smuggling twenty tons for each one that he entered.

In the earlier days shipbuilders on the New Brunswick side had been able to sell small and moderate-sized vessels in Great Britain, but gradually such craft were replaced by small steamers. Thus from the fifties on they were limited to the building of larger barques and ships. Here again, until they were superseded by steam and iron hulls they continued to enjoy a competitive advantage.

The New Brunswick vessels of the twenties, thirties, and forties, the 'leather ships' and 'sailors' coffins' had been put together for about £6 per ton.[45] They were usually of pine or spruce; they were built to carry lumber and emigrants, and so they were often carelessly and hurriedly

[45] Hugh Murray, op. cit., II, 249.

constructed. By the fifties quality had improved considerably and so had prices. By 1854 construction costs averaged £8 per ton at least half of which went for labor.[46]

During most of the fifties, sixties, and early seventies larger New Brunswick vessels were selling in England at fair prices, though at times this was not the case. The *Calais Advertiser* of 25 October 1860 reported that Chipman and Bolton, of St. Stephen had rejected British orders for two or three vessels because of the low price per ton offered. Four years later ships which had received a seven-year rating by Lloyds brought from £8 to £9 per ton and a few even more, but the price soon dropped.[47] Vessels with four-year ratings brought from £6 to £10. The following list should give some indications of the prices received for St. Stephen and St. Andrews vessels in Great Britain.

SALE PRICES OF VESSELS FROM NEW BRUNSWICK SIDE OF ST. CROIX

Vessel and Description	*Place Built*	*Date*	*Builder*	*Sale Price*	*Sold At*
Brig *Sir William Wallace* 321 tons: 100 x 27 x 6′6″ (between deck and beams)	St. Stephen	1824	D. Eastman	£1,130	Liverpool 1824
Ship *Ava* 460 tons: 118 x 29 x 20	Brandy Cove, St. Andrews	1833	Brewer	£4,000	Liverpool 1843
Barque *Robert Watt* 491 tons: 119 x 30 x 6′6″ (between deck and beams)	St. Andrews	1834	James Rait	£2,000	Liverpool 1834
Ship *Julius Ceasar* 737 tons: 133 x 28 x 21	Brandy Cove, St. Andrews	1837	Briggs	£4,100	Liverpool 1854
Ship *Charles Humberton* 569 tons: 133 x 27 x 21	St. Stephen	1838	Owen Hinds	£1,233	Liverpool 1838
Ship *Coronet* 739 tons: 144 x 29 x 22	Chamcook	1838	John Wilson	£6,000	Liverpool 1840
Barque *Fanny* 707 tons: 147 x 30 x 17	St. Stephen	1850	D. Eastman	$25,000	Boston (owners kept St. Andrews registry) 1850
Ship *Lammergeir* 703 tons: 159 x 23 x 18	Chamcook	1857	Thos. Wilson	£2,000	Liverpool 1857
Barque *Christina* 234 tons	St. David	1857	Thos. Coherell	$5,606	
Barque *Sea* 748 tons: 160 x 32 x 20	St. Stephen	1862	Chipman & Bolton	£6,000	Liverpool 1863
Ship *Sea Chief* 1,055 tons: 177 x 36 x 22	St. Stephen	1863	Short Brothers for Chipman & Bolton	£9,000	Liverpool 1864
Ship *Sea Crest* 956 tons: 174 x 35 x 22	St. Stephen	1863	Short Brothers for Chipman & Bolton	£9,000	Liverpool 1863

[St. Andrews Ships Register]

[46] M. H. Perley, op. cit., pp. 43-44.

[47] *Annual Returns of Trade and Navigation for New Brunswick*, 1864.

SALE PRICES OF VESSELS FROM MAINE SIDE OF ST. CROIX

Vessel and Description	*Place Built*	*Date*	*Builder*	*Sale Price*	*Sold At*
Barque *Telegraph* 503 tons	Robbinston	1854		$23,000 (at auction)	Boston 1855
Ship *Stalwart* 1,108 tons	Robbinston	1854	J. M. Balkam	$55,000	New York 1855
Ship *Henrietta* 678 tons	Robbinston	1857		£3,800	London 1863
Ship *Mary Storer* 519 tons	Robbinston	1859		$17,000	Genoa 1862 renamed *F. Pirandella*
Barque *Julius Cammert* 490 tons	Eastport	1859	C. S. Huston	$17,000	Genoa 1862
Brig *Nellie Mowe* 185 tons	Eastport	1860	C. S. Huston	$8,000	Philadelphia 1865
Schooner *Nellie Tarbox* 168 tons	Calais	1862		$9,000	Rockland, Me. 1865
Barque *Carlton* 434 tons	Calais	1863	C. H. Kelley	$8,000	New York for foreign account 1877
Barque *Cardenas* 380 tons	Calais	1867	Roland Huggins	$7,600	New York 1877

[Compiled from *Calais Advertiser*, *Eastport Sentinel*, and Registers of American Lloyds]

But the days of the St. Stephen and other New Brunswick shipbuilders were numbered. Steamships and iron hulls were slowly rendering their products obsolete. It proved difficult for Chipman and Bolton to dispose of their last vessel shares which were sold slowly a few at a time. On the New Brunswick side of the St. Croix, shipbuilding virtually came to an end with the launching by the Short brothers of the ship *Rocklands* (1,464 tons: 214′6″ x 38′6″ x 23′6″) in 1878.[48] Like many of the Short vessels she was built for the merchant-banker Zechariah Chipman, head of the firm of Chipman and Bolton. *Rocklands* joined the famous Ring fleet of St. John, New Brunswick, and later was sold to the DeWolfs of London. The vessel's career was a brief one. She was badly damaged in a terrible storm and abandoned at sea on 2 March 1882.

Over the years the St. Croix produced a notable group of ship carpenters. Data on wages and working conditions are scarce. As nearly as can be determined conditions remained fairly constant over most of the period though fluctuating with the market for vessels. During the boom of 1824 the *Eastport Sentinel* of 13 March announced that New Brunswick shipbuilders were offering $2.00 to $2.50 per day for carpenters. In 1850,

[48] St. Andrews Ships Register, Vols. 326 & 328; Wallace, op. cit., p. 256. Vincent Short, 'Rocklands, Last Vessel Built by Calais Firm,' *St. Croix Courier*, 5 August 1954.

two Eastport builders, Jacob Shackford and Caleb Huston were paying about $1.75.[49] On 2 April 1853 the *Frontier Journal*, of Calais, announced that shipwrights, joiners, and caulkers had agreed to strike for $2.50 per day of nine hours. This was somewhat above the prevailing wage. In Calais, according to the census of 1850, workmen in one yard had received an average wage of $28 per month, and in another they had averaged $30.[50] Data for the sixties and seventies indicate little change. In the early days workers in Jarius Keen's yard in Calais, and probably in the other yards as well, were served doughnuts and generous portions of rum twice a day.[51] Eleven A.M. and four P.M. were the usual hours for refreshments. In this early period the 'day,' of course, was from sunrise to sunset. But the temperance movement put an end to this good old custom.

In the long slack winter seasons carpenters could find work in the woods or on the wharves, and they were free to move back and forth across the border as conditions warranted. Doubtless such builders as Brewer, the Porters, and the Shorts moved men and crews across the river from time to time. Many of the carpenters owned and operated small farms on the side. During this period population on the St. Croix was increasing slowly. Towns were expanding, and there was often a considerable demand for skilled workmen. Sometimes the men attempted a venture on their own. On 3 August 1853 the *Eastport Sentinel* announced that a company of ship carpenters had turned out a 175-ton brig which they were offering for sale. Throughout the entire shipbuilding period plentiful supplies of cheap shipbuilding materials were available locally. In the early days quantities of pine masts and spars were shipped to Great Britain and to the larger Atlantic ports. Like so many down-East communities St. Stephen boasts of its 'old mast road.' Spruce was abundant and was used to a great extent. There was lots of hackmatack for reasonably durable but inexpensive frames and planking. Some beech, birch, and maple were also available locally. Some of the shipbuilders got out their own timber from time to time, and a few such as the Porters held large tracts of timberland.[52] Others were closely affiliated with lumber operators. As time went on and the quality and size of vessels improved, much oak and southern pine were imported. A cargo of the latter was unloaded in Eastport as early as 1829.[53]

Many of the later St. Croix vessels were able to get respectable ratings

[49] Census of 1850, 'Products of Industry.'

[50] Ibid.

[51] Fred W. Keen, *Calais Advertiser*, 26 November 1930.

[52] *Crown Land Reports* of New Brunswick.

[53] *Eastport Sentinel*, 12 August 1829.

though not always the highest. The ship *Aetos*, 1,286 tons, launched by Caleb S. Huston of Eastport in 1854, is an example of one of the better vessels.[54] A two-decker, with an eagle for a masthead, she measured 205′ x 27′ and was classed as a full ship rather than a clipper. Huston built her of Maine hardwood, spruce, and hackmatack. She was sold in Liverpool, where, after a time, she was rebuilt largely of oak and renamed *Lancastrian*. Lloyds gave her a class 2A rating.

One of the best of the later Calais vessels was the 771-ton barque *Mary Hasbrouck* launched by Boardman Brothers in 1877.[55] Her length on deck was 155′, her beam 35′, her hold 12′6″ and 7′, her poop 24′ long. She was built under a special French Lloyd's survey and was given a ten-year classification by the Ship Masters Association. She was constructed entirely of hackmatack and hard pine and fastened throughout with iron and composition bolts, while her cabin, furnished in black walnut, butternut, and mahogany, was described as large, airy, and comfortable. Her forecastle was on the deck and was furnished in a better style than were most cabins. Her builders sent her in ballast to New York, where they hoped to sell her, and she made the trip from Calais in seventy-two hours. From an economic standpoint, unfortunately, she was built a few years too late. She brought only $25,000, a sum well below her building costs.

The barque *Windemere* (695 tons: 162 x 34 x 19) was one of St. Stephen's better vessels.[56] Named for one of the lakes of England's lake district, she was launched early in October of 1870 by John and Charles Short for Chipman and Bolton who sold her to J. S. DeWolf and Company of Liverpool. In 1891 she was sold to Norway and her name changed to *Mizza*. She was built of spruce and hardwood, copper-fastened and iron-kneed and received an eight-year rating from Bureau Veritas. Her lines were between clipper and full. Her after cabin was well fitted and was furnished with native ash and butternut. Her keel was laid late in May, and the Shorts kept a crew of ninety men at work on her until the launching. Her first trip was to a southern port where she loaded cotton for England.

Her sister ship, the barque *Gracemere* (714 tons: 162 x 34 x 19′4″), also named for a Westmoreland County lake, was launched by the Shorts in the first week of October 1871 for Chipman and Bolton who sold forty-eight shares in her to DeWolfs of Liverpool and retained the remaining sixteen.[57] She was built to the same model as *Windemere*. She was con-

[54] Ibid., 3 January 1855 and 11 March 1891. Register of American Lloyds, 1865.

[55] *Calais Advertiser*, 5 December 1877; *Calais Times*, 6 and 13 December 1878 and 24 January 1879.

[56] *St. Croix Courier*, 9 June and 13 October 1870. St. Andrews Ships Register, Vols. 326 and 328.

[57] Ibid., 12 October 1871. St. Andrews Ships Register, Vols. 326 and 328.

structed of spruce, copper-fastened and iron-kneed, with stem and stern posts and windlass and rudder of oak. Her treenails were of locust, and her heavy waterways on both decks had special fastenings. The space between her timbers was filled with rock salt, and this added one year to her class. Her masts were pine, and she had modern type wire rigging fitted out by George Tennant of St. John, New Brunswick. Her double cabin was finished in oak and butternut. French Lloyds gave her an eight-year rating. After her launching she proceeded to Savannah where she loaded cotton for Liverpool.

The shipbuilding era on the St. Croix was virtually over by the close of the 1870's. (At Calais and at Perry, it is true, three schooners were built in 1890-1891, and a few small vessels were turned out on the New Brunswick side in the early eighties.) The depression of the seventies, iron hulls, and steam were in a great measure responsible. Shipbuilding on the St. Croix had never been too profitable, and many of the builders operated on a very close margin. There were a number of failures during the bad days of the fifties and in 1877 the Calais firm of Nickerson and Rideout, which had built some excellent vessels, went under. A few big companies, like Chipman and Bolton, of St. Stephen, which held onto some of their vessel shares and had many other interests, did very well. For a long time vessel shares were considered a good investment, and many were held on the St. Croix. On 21 February 1872 the *Eastport Sentinel* stated that net profits during recent years on forty of the vessels registered at St. Andrews had averaged 45 per cent. A year later 195 vessels of 19,716 tons were registered at St. Andrews.[58] The tax records of Calais, in the City Clerk's office, indicate that considerable revenue was once derived from taxes on vessel property. In 1877 ninety-three vessels of 12,774 tons were owned in Calais, and the following year there were eighty-five of 11,584 tons.[59] On 2 November 1910 the *Calais Advertiser* estimated that there were eighteen vessels owned in the city.

The 311-ton three-masted schooner *Vila y Hermano,* the last vessel built in Calais was a money maker. Only a few months after she was launched in 1891 she paid her owners a dividend of $42 to a ⅛₂ or 7 per cent on her costs.[60] This was realized on two cargoes, one loaded at Calais and discharged at Cardenas, Cuba, and the other taken at Apalachicola, Florida, and discharged at Cardenas.

In most respects shipbuilding activities on the St. Croix resembled

[58] *Supplement to the Annual Report of the Department of Marine and Fisheries, 1873* (Ottawa, 1874), p. 61.

[59] *Calais Times,* 22 February 1878.

[60] *Eastport Sentinel,* 2 March 1892.

those in other Maine and New Brunswick centers, but the international boundary did give local builders certain advantages. To students of the history of shipbuilding the operations on the Maine and New Brunswick sides offer interesting points for comparison and contrast. As additional data become available the picture will emerge more clearly.

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Certain Considerations on the Origin and Diffusion of Oculi

BY CARROLL QUIGLEY

WE are indebted to Mr. Bowen for new facts about the use of oculi on ancient watercraft and for pointing out certain errors or contradictions made by James Hornell in this subject. However, Mr. Bowen's interpretations of his evidence are quite mistaken. I refer especially to his statement that oculi were invented by the Romans and spread by them directly to India and from there to the Arabs and the Far East.[1] Such an interpretation violates known history and the recognized methods of cultural diffusion.

That the Romans were landlubbers has been accepted by all historians from Gibbon to Tarn, and is demonstrated most convincingly by Thiel.[2] As Tarn bluntly put it,[3] 'No Roman ever pulled an oar.' Rome had almost no ships before 260 B.C. and did not establish a standing navy until almost 250 years after that.[4] The naval vessels of the First Punic War, made in 260 B.C., were simple copies of a captured Carthaginian vessel, made by Greek shipwrights from southern Italy;[5] these were replaced in 242 B.C. by copies of a captured ship from Rhodes;[6] these were replaced again following 218 B.C. by similar vessels.[7] All of these ships of the Punic Wars were operated by non-Roman crews;[8] they were successful against Carth-

[1] R. L. Bowen, Jr., 'Maritime Superstitions of the Arabs,' THE AMERICAN NEPTUNE, XV (1955), 19-20.

[2] J. H. Thiel, *Studies on the History of Roman Sea-Power in Republican Times* (Amsterdam: North Holland Publishing Co., 1946), pp. 1-31.

[3] W. W. Tarn, 'The Roman Navy' in Sir J. E. Sandy, *Companion to Latin Studies* (third edition, Cambridge: Clarendon Press, 1921), p. 493.

[4] Ibid., p. 489; C. Courtois, 'Les politiques navales de l'empire romain.' *Revue historique*, CLXXXVI (1939), 17-47 and 225-259 at 18.

[5] A. M. Shepard, *Sea Power in Ancient History* (London: Heinemann, 1925), p. 142, based on Florus II, 2; Pliny, *Historia Naturalis*, XVI, 192; and Polybius, II, 20-21.

[6] Thiel, op. cit., p. 445, from Polybius I, 58, 8.

[7] Ibid., p. 35, and pp. 48-49; Tarn, 'The Fleets of the First Punic War,' *Journal of Hellenic Studies*, XXVII (1907), 48-60.

[8] Thiel, op. cit., pp. 12-13, based largely on Livy.

age because the Romans were able to convert sea warfare into a kind of land fighting by overloading their vessels with land soldiers who fought as soldiers after the Roman vessels were locked to enemy ships by boarding bridges and grapnels.[9] The Roman point of view can be seen in the fact that even at sea the naval commander of a squadron of vessels was of lower rank than the military centurions aboard his ships.[10] After the second war with Carthage (218-201 B.C.), Rome allowed its fleet to decay and relied on mercenary non-Roman ships and various naval allies such as Rhodes. To quote Tarn again, 'The old navy never fought another action after the fall of Carthage. The Roman squadron of the Social War [89 B.C.] was furnished by the Asiatic Greeks. Against Mithradates [87-86 B.C.] Sulla had no fleet at all. Lucullus risked his life to beg ships in Egypt and Asia. In the second war Lucullus with 100 ships succeeded in driving Mithradates from the sea, but all the ships were Greek. Though Rome was possibly never without ships, the idea of a national navy was dead; and, with the abolition by Sulla of the standing consular command over Italy, the basis of that navy, the general sea command also vanished.'[11]

Conditions were not much different under the Principate. When Augustus created a standing navy it consisted of no more than two fleets (in the Tyrrhenian and Adriatic seas) to protect Italy, this at a time when the Empire included Egypt, Syria, Spain, and Gaul.[12] Only under Claudius (about A.D. 50), according to Courtois, were standing fleets created for Alexandria, Syria, the Black Sea, and Britain.[13] These six fleets were locally equipped and locally supported and can be called Roman only in a legalistic sense. They continued to exist for no more than 150 years; after the crisis of the third century the Roman Empire had no 'high seas' fleets at all.[14] It is also notable, in view of Mr. Bowen's emphasis on Rome's nautical influence on India, that Rome never had a standing fleet east of Suez and that the fleets which were occasionally used in that area (such as the crossing of the Red Sea by Aelius Gallus in 24 B.C.) were local vessels in temporary service.[15] It is clear that, during the period in which Mr.

9 Ibid., pp. 432-447; Tarn, 'The Roman Navy,' p. 500; Shepard, op. cit., *passim*, especially pp. 144-153.

10 Tarn, 'The Roman Navy,' p. 500; this is rejected by C. G. Starr, *The Roman Imperial Navy*, 31 B.C.-A.D. 324 (Ithaca: Cornell University Press, 1941), pp. 42-43.

11 Tarn, 'The Roman Navy,' p. 493.

12 Courtois, op. cit., pp. 19-30.

13 Ibid., pp. 30-40.

14 Ibid., pp. 40-47, 225-238.

15 Tarn, 'The Roman Navy,' p. 500. The Gallus expedition of 24 B.C. is in Strabo XVI, 4, 23. See also Starr, op. cit., pp. 111-113, 175.

Bowen believes that Roman nautical influences were pervading India, the Roman fleets were divided into isolated geographic commands and were all made and manned by local (that is, non-Roman) forces. Moreover, there was no Roman navy in Indian waters.

What has been said of the Roman military navy was also true of its mercantile marine. Hatzfeld and Parvan have shown that even under the Republic the merchant marine was non-Roman. This has been accepted by Thiel.[16]

It would be unthinkable that landlubbers such as these could have invented and diffused a widespread, non-functional, characteristic such as the use of oculi. As to the Romans spreading this characteristic to India, this is quite impossible. Mr. Bowen speaks freely of Roman colonies in India and even tells us that 'Roman influence was strong' there.[17] Many authorities doubt that any Romans ever went to India, while most agree that Roman ships or Roman shipbuilders never did. J. O. Thomson is one who doubts that Romans reached India.[18] On the other hand, M. P. Charlesworth, depending on Pliny, believes that many did, but feels that the vessels they used were Greek, Arabian, or Indian. He also notes at least nine Indian diplomatic missions to Rome up to the time of Constantine, but can find no evidence of any Roman missions in return.[19] The consensus that Roman vessels were absent from the area destroys Bowen's argument that oculi and red bow-patches on Indian ships were copied from Roman vessels. As a matter of fact, Charlesworth's statements about Romans and Roman colonies in India does not mean, as it perhaps seems to mean and as Bowen seems to interpret it, that Latin-speaking Romans were in India, but that Roman subjects (which could include Egyptians, Greeks, or Arabs) were there. This is clear from Charlesworth's use of the Tanil word 'Yavana' to refer to these 'Roman' colonists. For 'Yavana' means Greeks. The word 'was derived from the Old Persian

[16] Thiel, op. cit., pp. 27-28.

[17] Bowen, op. cit., pp. 19-21.

[18] J. O. Thomson, *History of Ancient Geography* (Cambridge: University Press, 1948), p. 299.

[19] M. P. Charlesworth, *Trade Routes and Commerce of the Roman Empire* (Cambridge: University Press, 1926), pp. 58-73 and M. P. Charlesworth, 'Roman Trade with India: a Resurvey' in P. R. Coleman-Norton, ed., *Studies in Roman Economic and Social History in Honor of Allan Chester Johnson* (Princeton: University Press, 1951), pp. 131-143 at 140-141. It is worth noting that Charlesworth feels, in the later work, that 'Graeco-Roman boats' were in the Erythraean Sea in imperial times. Apparently the only new evidence in this direction is a find of Roman goods, including 150 pottery sherds, near Pondicherry; this would seem to me to demonstrate import of Roman goods (which has never been denied) rather than the presence of Romans or, even less, of Roman vessels. Charlesworth makes no real effort to distinguish between these three, continues to use the word 'Roman' in an ambiguous sense, and is still not aware that the word 'Yavana' refers to Greek-speaking persons, as in note 20.

form *Yauna*, signifying originally the Ionian Greeks, but later all people of Greek nationality [speech].'[20]

Roman unfamiliarity with the Arabic and Indian oceans (the Erythraean Sea) is clear from the extant classical geographers. Of the four chief sources (Strabo, Pliny, the *Periplus of the Erythraean Sea*, and Ptolemy), three are non-Roman, while Pliny's material is based on a Greek work by Megasthenes.[21] These Greek geographers in turn were frequently based on the work of earlier writers, as Ptolemy's information on the Indian Ocean was based on Marinus of Tyre, who may have been a Semite.[22]

Bowen rejects Hornell's suggestion that all Mediterranean oculi are of Greek origin on the ground that Greek boats never have colored bow-patches but only oculi, while Roman boats had both. By linking red bow-patches and oculi, found together on Roman boats, with a similar combination on Indian boats, he tries to support his argument that the Indian combination must be of Roman origin. He fails to see the problem presented by these two areas together. Why should the Greeks, who were close to the Romans and were under a considerable Roman influence, have adopted the oculi but not the bow-patches, while the Indians, who were remote from the Romans and under much weaker Roman influence, adopted both? The solution to this probably is very simple. Neither the Greeks nor the Indians (or for that matter, the Semites nor Egyptians) adopted any shipmaking techniques from the Romans. Not if, as we have shown, 'Roman' vessels were generally built, and always manned, by non-Romans.

The key to the origin and diffusion of oculi rests, I believe, on a relationship recognized by Mr. Bowen although he misses its full significance: in historic times there seems to be a close coincidence between the area where lateen sails were used and the area where oculi and colored bow-patches were used. Poujade has shown that the lateen sail is of Semitic (Arabic) origin and generally diffused only to those areas where the Arabs had political domination (including North Africa and the Iberian peninsula). If there is any connection between the lateen sail and the use of oculi with bow-patches, as Bowen seems to believe,[23] the latter combination must also be of Semite origin and the direction of the diffusion could

[20] R. C. Majumdar, *The History and Culture of the Indian People* (10 vols., Bombay, 1950, in progress), III, *The Age of Imperial Unity* (second edition, Bombay: Bharatiya Vidya Bhavan, 1953), p. 101.

[21] Thomson, op. cit., p. 302.

[22] Ibid., p. 229.

[23] Bowen, op. cit., p. 15.

not possibly have been from Romans to Semites but must have been from Semites to Romans. This is supported by the fact that Greek maritime techniques and ships were based on Phoenician (that is Semitic) origins while Roman ships were based on Carthaginian (that is Phoenician colonial) origins. Since the area of oculi stretches from Portugal to the Far East ('la route des Indes' as Poujade calls it), while the area of lateen sails and of colored bow-patches stretches from Western Europe to India, it is unreasonable to assume that any of these originated in Rome, or anywhere in the extreme west, and much more reasonable to assume that all three originated at some more central locality such as the Erythraean Sea (although all three need not have originated at the same place or have diffused together). It is quite clear that general cultural diffusion has been from the Levant westward, from Phoenicians to Greeks and Carthage, from Greeks and Carthaginians to Rome. The admitted diffusion of the lateen sail from the Levant to the Iberian peninsula along the coasts of North Africa shows that this nautical technique moved along these same lines, although probably at a later date than bow-patches and oculi.

There have been three chief periods in which Semite influences diffused westward from the Near East to the western Mediterranean. In order these are: (1) the Megalithic influence from 3500 to 1500 B.C.; (2) the Phoenician influence from 900 to 480 B.C., continued by the Carthagian influence until about 200 B.C.; and, (3) the Saracen influence from A.D. 640 to about 1400. Poujade believes that the lateen sail came with the Saracens.[24] However, Lionel Casson has just shown that the lateen sail was found occasionally in the eastern Mediterranean as early as the second century.[25] If the connection between lateen sails and oculi exists, as Bowen suspects, this could be interpreted to mean that Semite peoples had both, even in the Phoenician period, that oculi and a few lateen sails came into the Mediterranean in this period, and that the lateen sail diffused westward generally only in the Saracen period. The difference in speed of diffusion between oculi and lateen sail is covered by a 'law' of diffusion stated by Poujade. By this rule, techniques of hull construction diffuse more readily than sails and rigging because the former diffuse by commercial contact while the latter diffuse readily only under political domination. This rule, according to Poujade, will explain why the more efficient lateen sail did not replace the less efficient square sail in the Mediterranean except in areas of Saracen domination, while, in the

[24] J. Poujade, *La route des Indes et ses navires* (Paris: Payot, 1946), p. 152.

[25] L. Casson, 'The Sails of the Ancient Mariner,' *Archaeology*, VII (Winter 1954), 215-219. The lateen sail is depicted on a tombstone at Miletus of about A.D. 200.

Far East, the more efficient lattice sail of the Chinese extended no further than the boundaries of Chinese political domination.[26]

Mr. Bowen makes a great deal of the fact that the Romans used colored bow-patches with oculi. He rejects Hornell's argument that Roman oculi are derived from the Greeks on the ground that the Greeks used oculi without bow-patches, while the Romans used both. He argues that Indian oculi must be derived from Roman inspiration because both areas used oculi on bow-patches colored red. But in his own article Mr. Bowen gives evidence showing that bow-patches originated at some more central locality, probably in Egypt.[27] Mr. Bowen is aware that there is some connection between the use of colored bow-patches and 'the worship of Isis or some other goddess' (p. 35). He does not seem to realize that Isis is not a Roman deity, but is the Egyptian name for the Asiatic Earth-Mother goddess who was known to the Babylonians as Ishtar or to the Syrians as Astarte. The Romans had no equivalent deity, for Isis's chief functions (as patron of the growing crops, of fertility, and of love) were separated, among the Romans and Greeks, between Ceres and Venus or Demeter and Aphrodite. The association of the colored bow-patch with Isis even among the Romans is shown by the fact, observed by Bowen (p. 22), that the patch was replaced by the word 'Isis' near an oculus on some Roman vessels. If the bow-patch, like Isis, was not Roman but Egyptian, it could not have come to India from Rome. The fact that the Greeks, and others, had oculi without patches while the Egyptians had patches without oculi would seem to indicate that these two features had different origins and became combined in certain areas to which they diffused. Since Greek shipbuilding came from the Phoenicians (Syria) while Roman shipbuilding came from North Africa (Carthage) and only later from Greek models, it seems likely that the Romans combined the two features, the oculus from the Semites and colored bow-patches from Egypt. The same combination was undoubtedly made by the Arabs of the Erythraean Sea and diffused from them to the Indians. Mr. Bowen argues that these two features could not have diffused from the Arabs to the Indians because Arab bow-patches were generally green while Indian and Mediterranean bow-patches were generally red. But at a later point in his article (p. 27) he recognizes that green is a color sacred to Islam and that the Arabs made their patches green for this reason. This change of color, however, did not occur, as Bowen seems to believe, at the moment when the Arabs adopted

[26] Poujade, op. cit., pp. 140-160 and 174-177.

[27] Bowen, op. cit., p. 19.

the use of bow-patches, but long afterwards at the advent of Islam. As Bowen recognizes, the red color of bow-patches was derived from the bloody sacrifice associated with primitive boat launching. The Arabs practiced such bloody sacrifice on a large scale in the pre-Islamic period and undoubtedly used red bow-patches at that time. When Islam discouraged the use of bloody sacrifice,[28] the Arabs changed the color of their patches from red to the sacred green of Islam, but they had already diffused the red patch to India. Later still, the Islamic prohibition on images had a tendency to decrease the use of oculi on Arabic vessels, as Bowen points out, but was less successful, because prohibition of oculi was a much more drastic step than merely changing the color of a bow-patch from red to green.

Mr. Bowen seems to be aware that the Egyptians used oculi on their watercraft as early as 2,000 years before there were any Romans, but he rejects Hornell's statement that Greek and Roman oculi are derived from this Egyptian source on the grounds that Egyptian oculi are found only on funeral barges and royal craft of the Pharoah.[29] It is difficult to see how this restriction would prevent diffusion of the custom even if the restriction were a fact (which it is not) since all of history seems to show that diffusion downward is more common than upward between social classes and that diffusion from one people to another would in no way be prevented by any class restrictions among the original people. As a matter of fact, oculi are found in Early Dynastic Egypt both on funeral barks and on ordinary craft and on both riverine craft and on sea-going ships as well as on royal and non-royal vessels. As early as the Fifth Dynasty (2500 B.C.), we find an oculus on the high vertical stem of a sea-going cargo vessel of the time of Sahure, while riverine pleasure craft with oculi are found in non-royal tombs of a later period, such as the grave of Nakht at Asyut of Eleventh Dynasty times (about 2000 B.C.).[30] Since many of the

[28] A. Guillaume, *Islam* (Harmondsworth: Penguin Books, 1954), pp. 8-9.

[29] Bowen, op. cit., p. 35; James Hornell, *Water Transport; Origins and Early Evolution* (Cambridge: University Press, 1946), p. 287.

[30] On funeral barks, many examples, of Twelfth Dynasty (about 1900 B.C.); see plates 64-66 and pp. 68-71 in J. H. Breasted, Jr., *Egyptian Servant Statues* (Washington: Bollinger Foundation, 1948). It is not yet known if the fifty-foot funeral bark of the First Dynasty (about 3000 B.C.), recently found by W. B. Emery, has oculi. There were oculi on sea-going cargo ships of the time of Sahure (about 2500 B.C.) as can be seen from many reproductions of the known example, originally published by L. Borchardt, *Grabdenkmal des Königs Sahure* (2 vols., Leipzig: E. Assmann, 1913), plates 11-12, and frequently reproduced as in A. Köster, *Das antike Seewesen* (Berlin: Schoetz und Parrhysius, 1923), pp. 21-22. That this vessel was a sea-going cargo craft and had oculi may be seen in R. O. Faulkner, 'Egyptian Seagoing Ships,' *Journal of Egyptian Archaeology*, XXVI (1941), 3-9. Use of the same symbol on riverine pleasure craft of the Eleventh Dynasty can be seen in Breasted, op. cit., plate 69A and text pp. 76-78, reproduced from E. G. Chassinat and C. Palanque, *Une campagne de fouilles dans la nécropole d'Assiout*, forming vol. XXIV of *Mémoires publiées par les membres de l' Institut francais d'archéologie orientale du Caire* (Cairo, 1911), plate XIV.

earliest types of Egyptian watercraft were derived from some eastern source, possibly Mesopotamia, as early as the pre-dynastic period (before 3100 B.C.),[31] it is not clear if oculi are an independent Egyptian invention or came in with these early watercraft of Mesopotamian type.

In conclusion it might be said that the use of oculi and of colored bow-patches on watercraft originated in the Near East, probably in the area between the Nile and the Persian Gulf. The two features may have originated in the same locality although the chances are somewhat better that they originated in different areas since they did not always diffuse together. Of the two, the use of colored bow-patches seems to have originated in Egypt and to be associated with Isis. Both seem to have been diffused in the Mediterranean by Semite sailors, although we are not yet in a position to say whether this was done by the early Megalithic diffusion or by the much later Phoenician diffusion, or by both. The use of oculi on colored bow-patches, found in both Egypt and Rome may be associated with the Phoenician colony at Carthage and placed, thus, in the first millennium B.C. The close association of this combination with lateen sails would seem to strengthen this last possibility and would fix the date for the diffusion of this combination of oculi and colored bow-patches shortly before 500 B.C. But all the evidence would seem to indicate that there had been an earlier diffusion of oculi on the Mediterranean, either by Egyptian or by Megalithic ships, at least two millennia before, and that the Greek use of oculi alone was derived from this earlier influence, possibly through Minoan-Mycenaean intermediaries.[32]

[31] On Mesopotamian or other eastern influence on pre-dynastic Egypt see *Time* (14 March 1955), p. 63. That ships were included in this influence see G. Brunton, *Mostagedda and the Tasian Culture* (London: B. Quaritch, 1937), pp. 83-84 and plate 38; H. Frankfort, *The Birth of Civilization in the Near East* (Bloomington, Indiana: University Press, 1951), appendix; R. W. Ehrich, *Relative Chronologies in Old World Archaeology* (Chicago: University Press, 1954), pp. 3, 6-7.

[32] Sea-going vessels were bringing to Egypt cedars of Lebanon which were over three feet in diameter and many feet long in the First Dynasty (according to Walter B. Emery, excavator of these royal tombs at North Sakkara, in conversation with me, 10 March 1955; the 50-foot funeral boat found in this operation was fastened with wooden dowels).

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A 26-foot American Cutter in the Naval Museum of Venice

BY G. B. RUBIN DE CERVIN

ABOUT the middle of 1866 Austria and Italy were contending the many items which still remained to be settled after the last wars, and once more it seemed as if the Lombardy plains would soon become the scene of bitter fighting. On land the Austrians had a vast superiority in numbers and arms, while on the sea the scales were in favor of the Italian Navy, which in 1860 had suddenly doubled its forces when the crews and ships of the Bourbons of Naples had gone over to the infant Sardinian Fleet.

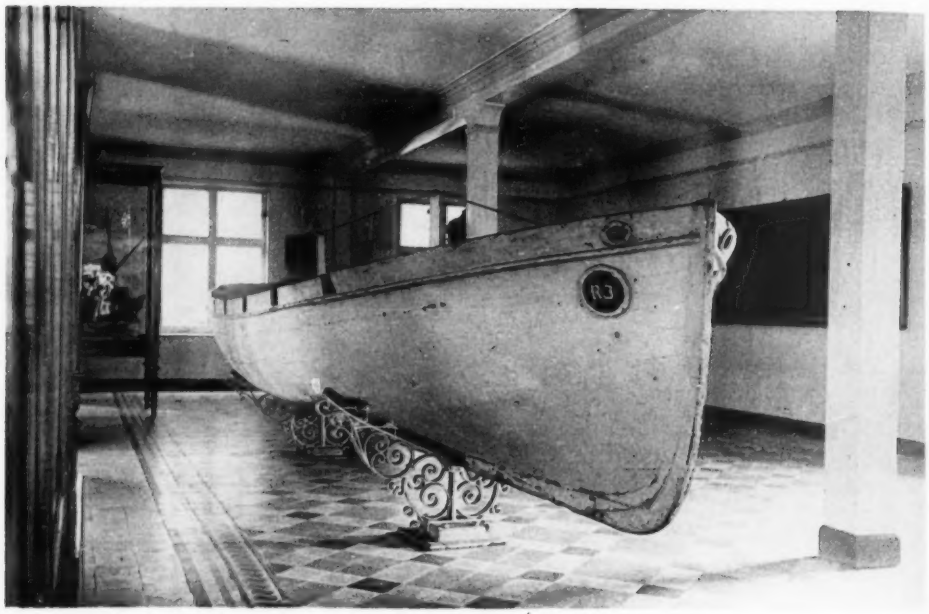
Those same years, however, were marked by great transformations as regards structural materials, motive power, armament and armor for all navies of the world. This metamorphose, though rapid in comparison with any previous evolution in naval architecture, was not completed at one step, but through a series of stages, so that when war broke out, the Italian fleet was still composed of a variety of quite individual designs. One classification, however, had been achieved by getting all the ironclads into one squadron, and all the unarmored wooden hulls into another. It was realized that the latter were not fit anymore to 'lie in the line,' after the lesson which had been taught during the engagement of Hampton Roads. When in the early sixties a new armed conflict with the Austrian Empire seemed inevitable, the Italian government began to secure new warships wherever they were available; thus no less than nine vessels were hastily commissioned to shipbuilding yards of France, and five more to English firms, though the backbone of the whole fleet was to be formed by two ironclad steam-frigates, orders for which had been placed with Messrs. W. H. Webb of New York, and were to be named *Re d'Italia* and *Don Luigi Re di Portogallo*. The first of the two was laid down in 1861 and taken over in New York by Italian ratings in September 1864, though leaving American waters only on 8 March 1865. Her sister-ship joined the Italian naval forces by the autumn of that same year.

While the rest of the vessels which had been mustered in the naval base of Taranto all showed that unattractive build which was so typical of the warships of early Victorian design, these two still kept some of the austere cleanness of line and general smart appearance for which the American clippers were well famous. In matter of armament they followed the old principle of having internally mounted, muzzle-loading Armstrong guns, although breech-loaders by then were being successfully experimented with on other Italian ships. Furthermore, as the new, artificially generated power still had its many drawbacks, with frequent engine troubles and excessive use of coal, it was found safer to retain the old means of movement and both ships were rigged as barques. All square yards, however, were later discarded. A contemporary lithograph shows *Re d'Italia* as she appeared, probably on her maiden voyage, leaving New York harbor with every stitch of canvas drawing, the Stars and Stripes at her fore and the Italian war ensign at her peak.

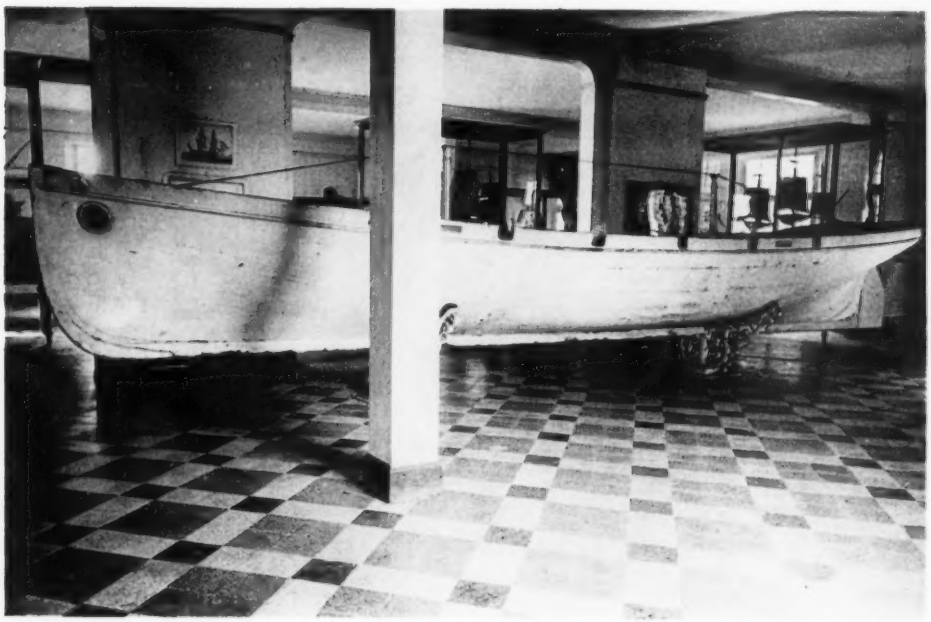
War having been declared on 20 June 1866, the Italian fleet, under the command of Admiral Pellion di Persano, who had hoisted his flag on *Re d'Italia*, steamed up the Adriatic and anchored in the fortified harbor of Ancona, which had been chosen as an advanced naval station for future war operations. As events were soon to prove, the choice of this commander had been a most inadvisable step due to interference of incompetent politicians. Although vague orders had been given to him to clear the Adriatic of all enemy ships, no signs of any activity on his part were seen for some time; it was only later, under severe criticism from the press, that the government decided that something had to be done. He was finally issued instructions to attempt a landing on the Austrian stronghold of Lissa, an island lying at the southern end of the Dalmatian coast, which at that time was still referred to as the Gibraltar of the Adriatic. The site had already been the scene of a naval combat back in 1811 between a Franco-Italian squadron and a British division under the command of Captain Hoste, the latter coming out the better. The place had then been fortified and held by a British garrison up to 1820, when finally the island was assigned to Austria.

It so happened that the second battle for Lissa started on 18 July when the whole Italian fleet, painted as a novelty a wartime dark gray, showed up opening fire against the many defenses and batteries (some of which still bore English names, such as Fort Hoste and Fort Bentinck). But two days later, when many of the fortifications had been 'softened up' and landing parties had got under way, the Austrian fleet was sud-

Ironclad screw frigate *Re d'Italia* of 5968 tons, 32 guns, built in 1863 by W. H. Webb of New York for the Italian government. Her sister ship *Don Luigi Re d: Portogallo*, built by the same firm for the Italian Navy, had an uneventful career and was broken up in 1875



Bow view of the cutter showing the pleasing lines. Note the ship's crest with the initials *R d I*



Re d'Italia's cutter as she appears today in the Naval Museum of Venice. Beneath the dull white paint, possibly given to her during the time she was in Austrian hands, the original black color was revealed

denly sighted on the horizon. The enemy commander, Admiral Wilhelm Von Teghettoff, having received the news in Pola that the Italian ships were scattered off guard near Lissa, and who had been waiting for this very chance, was now rushing to relieve the besieged garrison.

Teghettoff was a man of action who had gained much fame when in 1865 he had beaten the Danes off Helgoland, but his main accomplishment had undoubtedly been the building up, almost from scrap, of an efficient Austrian Navy, a feat which he had achieved by successfully blending together officers and ranks of German extraction, with ratings coming mostly from the Italian coastal towns of the Venetian region.

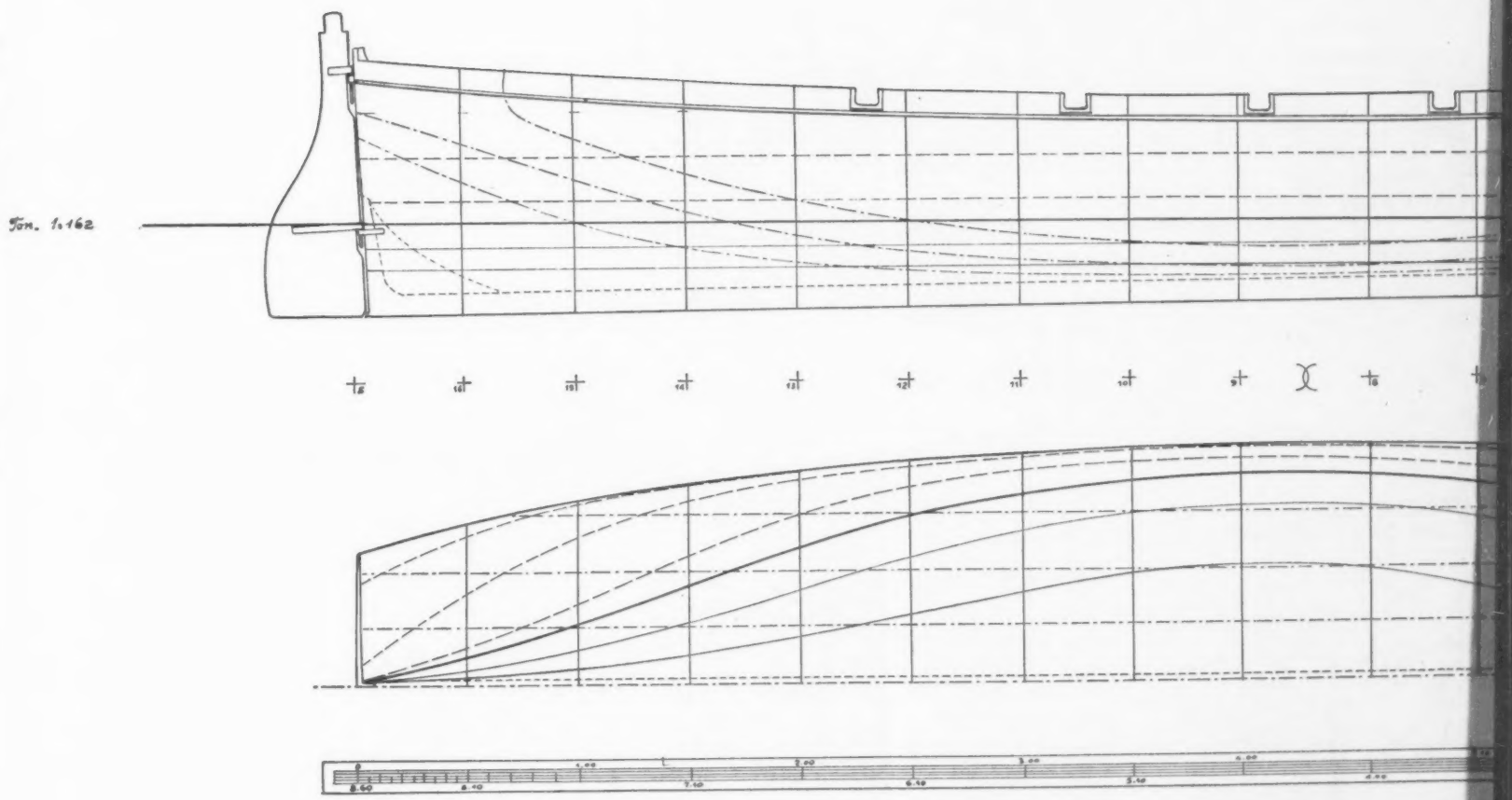
The Austrian Admiral, possibly still under the impression caused by the naval combat between *Merrimac* and *Monitor,* regarded the ramming attack as the surest form of modern offensive and bore down upon the Italians with the full weight of his ships which he had massed in one close formation. Persano, on the opposite, was a follower of the rules of naval warfare as laid down by the French Admiral Bouet-Willaumez in his fundamental work *La Tactique Supplémentaire à l'usage d'une Flotte Cuirassée,* and in accordance had formed his vessels in a double line of battle with a course shaped roughly NNE, with all his unarmored units far astern on his lee side. Soon after 11 A.M. both fleets opened up, the Austrian clearly aiming to cut through the Italian main squadron and split the line of battle in two. Having in fact achieved this, Teghettoff promptly veered around 360° and hit back again. This time his flagship *Erherzog Ferdinand Maximilian* rammed *Re d'Italia* square on her starbroad side, shortly abaft her foremast. She went down like a stone with her colors flying, but with the loss of most of her complement. As the ship was seen to disappear, it was thought for a time that the Italian Admiral had gone down with her. But this was not so, for shortly before the two fleets came to bear, Persano suddenly and unexpectedly thought fit to shift his flag over to the ram-cruiser *Affondatore,* which only the day before had rushed to join his forces, straight from the yards of Messrs. Millwal & Co. of London. In order to do so, one of the ship's boats was lowered in the sea, a fateful move if ever, which forcibly caused the center and the rear of the Italian line to come to a standstill, while the van somehow was kept on its course, thus opening a wide gap through which the Austrians soon passed, playing havoc. Carrying the Admiral and his staff, the boat pulled off, making straight for *Affondatore* which had been signaled to come alongside and stand by. This was done in the nick of

time, for by then the enemy was closing in and not one minute could be spared to hoist the boat back on board again; thus she was left with her complement of eight bluejackets and one petty officer to shift for herself amidst the rain of cannon shots and musketry fire, the toppling of masts and splinters flying from crashing bulkheads.

Though the actual fighting was all over some forty-five minutes later, the two fleets did not come to close range anymore. Persano by his indecisive behavior failed to come back into action again, though his line was formed once more in good order, and Teghettoff was quite satisfied to have scored, after his initial thrust, a second loss to the Italians, when the armored gunboat *Palestro* was seen to blow up and disintegrate. That evening, while the Austrian Admiral was taking shelter within the harbor of Lissa, and Persano was steaming home to Ancona (where he was going to face a court-martial and hence disgrace), one of the minor units of the Italian fleet, the paddle-steamer *Governolo*, finally picked up the crew from *Re d'Italia*'s lifeboat, the craft herself being definitely abandoned to her fate. She was found the next morning by the Austrians off the northern shores of Lissa and then promptly shipped to Pola, where she was to become a war trophy in the local naval museum.

The action fought off Lissa was to have no relevant political influence on the course of the war, for a few days later hostilities ceased when, owing to French mediation, an agreement was reached by which Austria was to hand over to Italy the town of Venice and the remaining Venetian region, with the exclusion of Trieste. However, indirectly the results of this encounter were soon to give rise to extravagant conceptions as regards the possibilities of the ram, and many admiralties were set wondering about the 'new look' which warships would have in the near future. Thus the Italians produced the *Dandolo* class of battleships (1885) bearing a moderate ram, while the French went to extremes with the cruisers *Hoche* (1886) and *Dupuy-de-Lôme* (1890). Only the British Admiralty seemed to have taken a more sober view of things, experimenting with only one torpedo-ram cruiser, H.M.S. *Polyphemus,* which was launched in 1881.

With the passing years other grave events were to come and change the face of Europe; in 1918 the Austrian-Hungarian Empire disintegrated and so did the K. u K. Kriegsmarine, the Italians taking over this time its many naval establishments along the coasts of Istria and Dalmatia. In Pola they found lying intact (still with the ship's crest on her bow) the boat which had belonged to the unfortunate *Re d'Italia,* which



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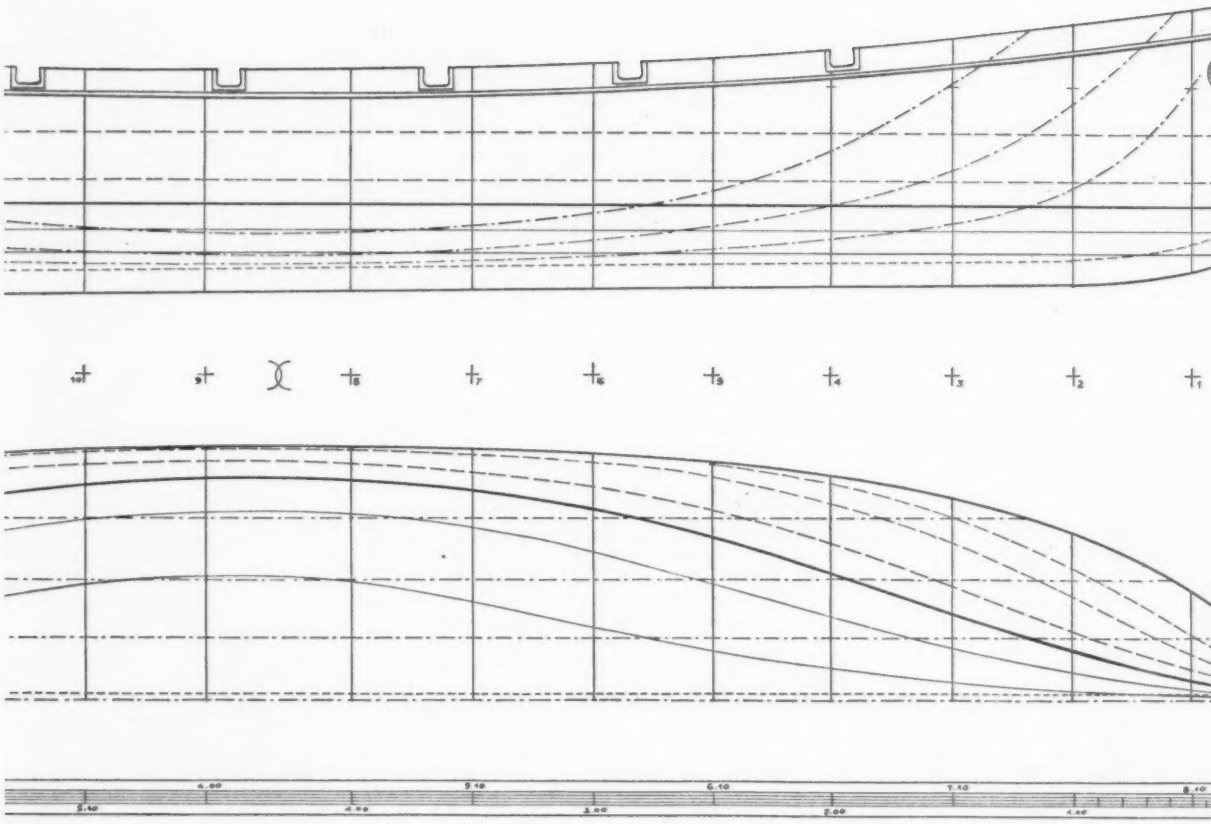
placement is 2560 lbs. Dimensions are: 28′ 3″ over



of the 26-foot American-built cutter as taken off by the authors. At designed W.L., dis-
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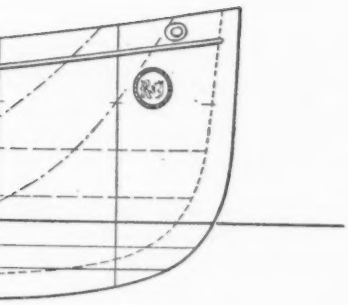

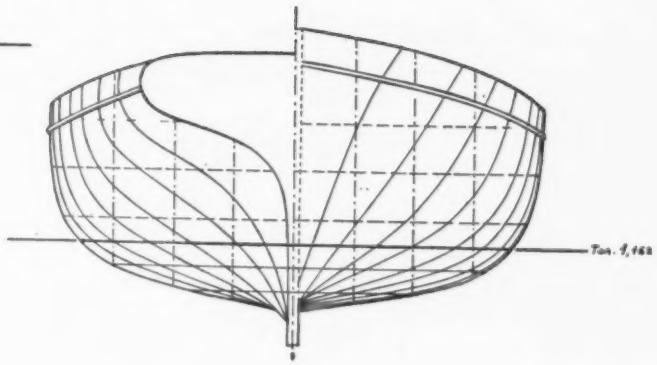
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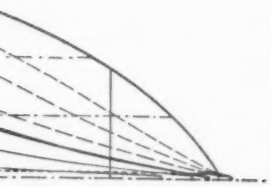

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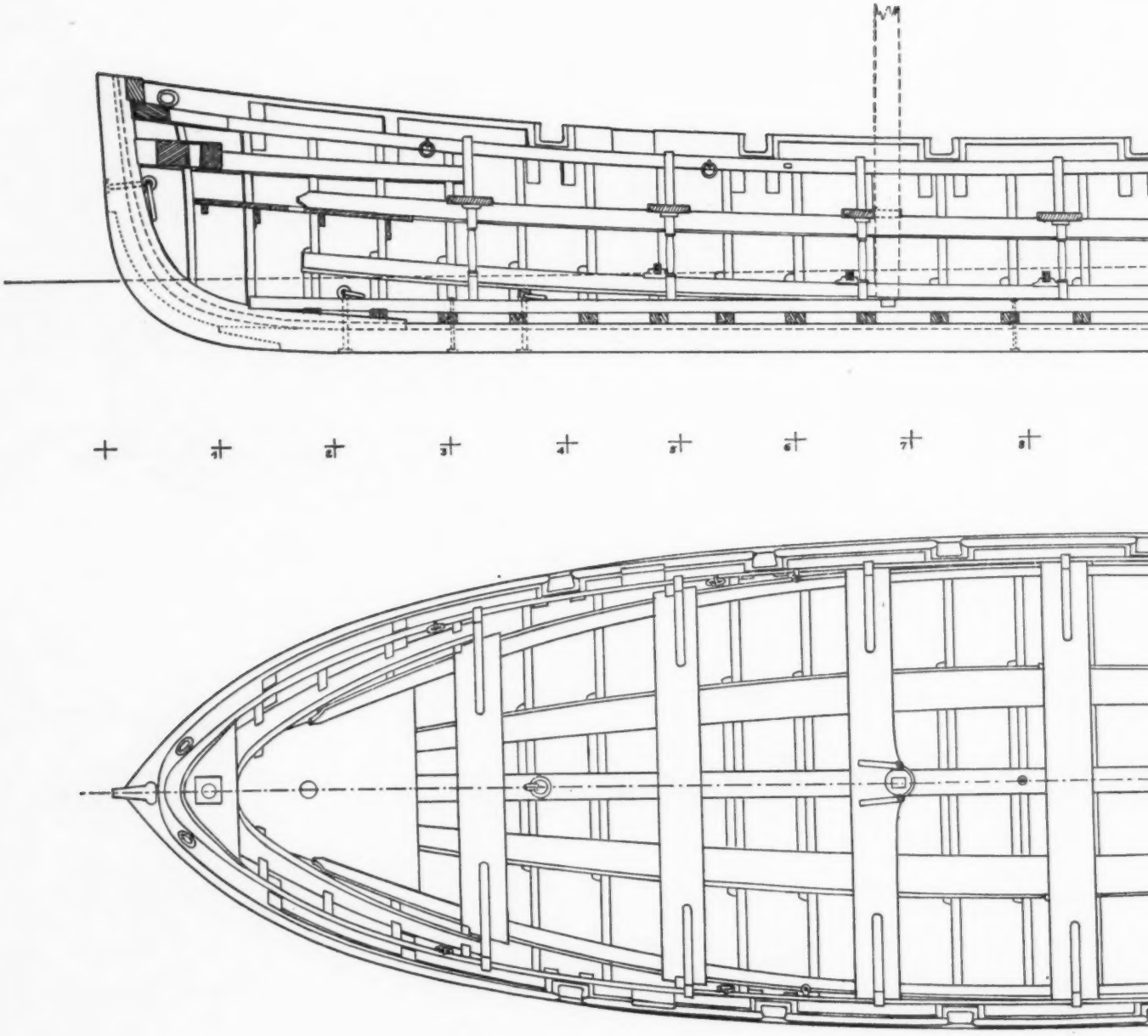

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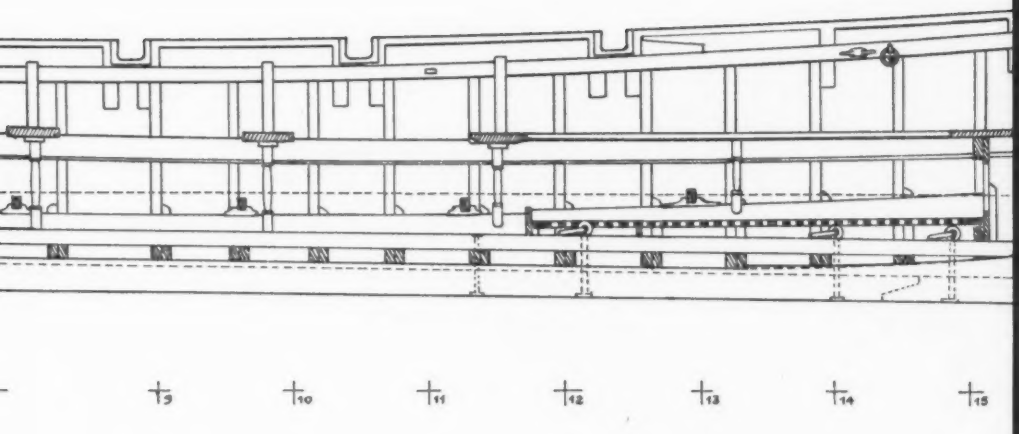
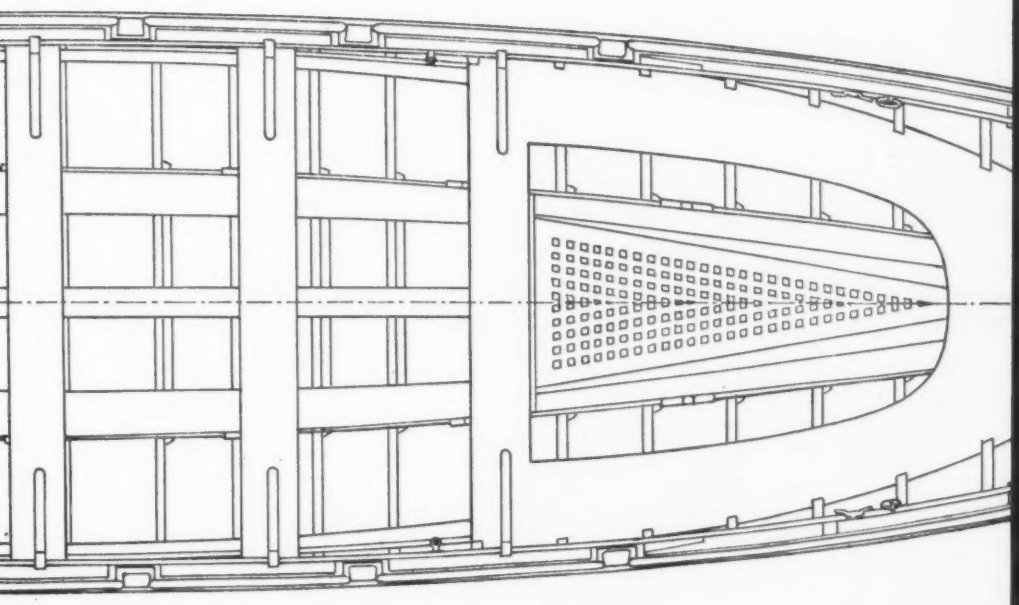
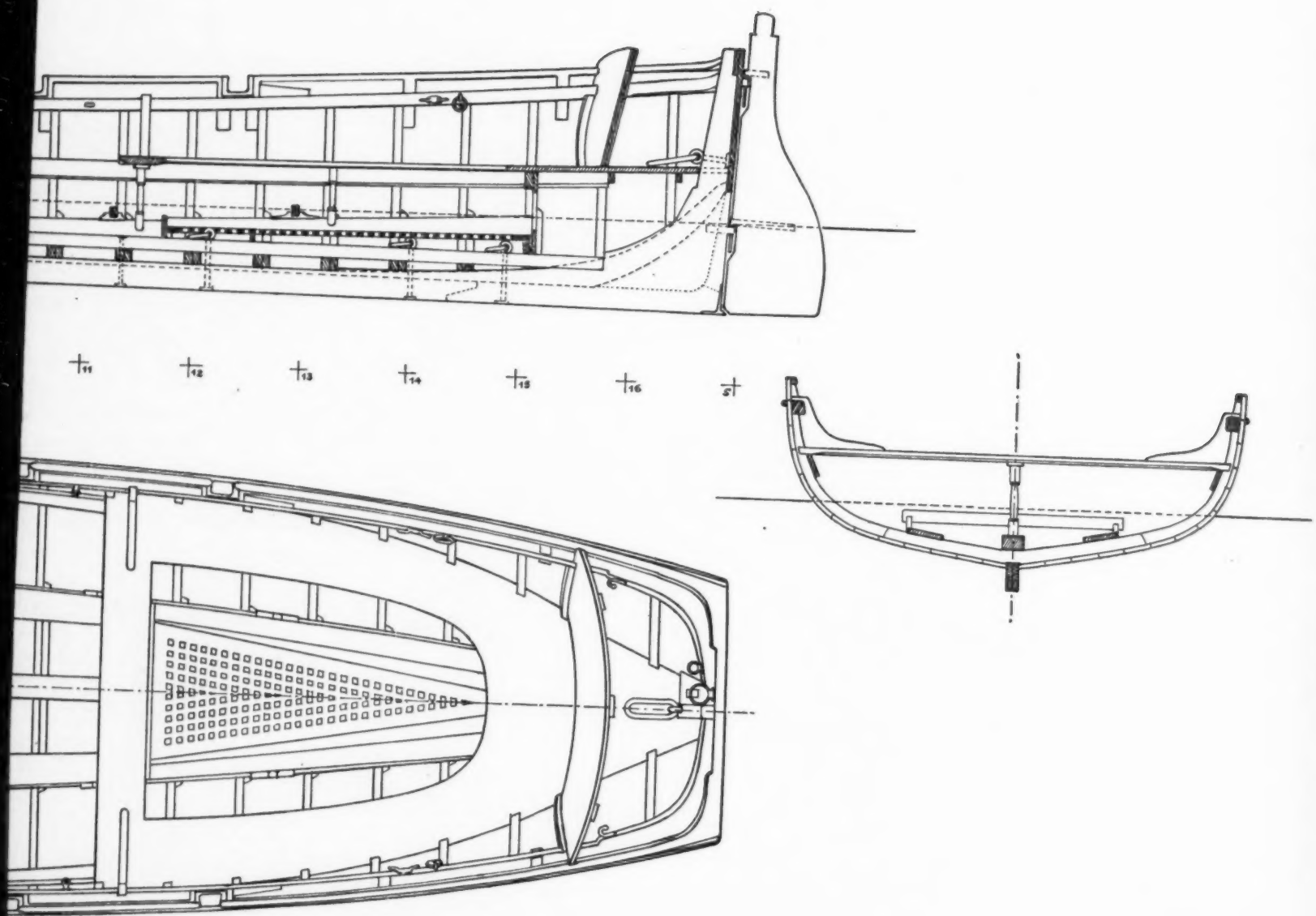




ls solid construction with hull reinforced by abundance of angle-brackets and knees.



reinforced by abundance of angle-brackets and knees.

soon after was transferred to the Museo Storico Navale of Venice, where she is preserved to this day.

No plans seem to exist anymore of the ironclad frigate *Re d'Italia,* so that it becomes impossible to state the exact number and types of boats which she carried, although five of them are distinctly visible on the aforementioned lithograph hanging from their boom davits and two more stowed one inside the other, just abaft the foremast. It is therefore likely that this surviving boat, whose size coincides with the after pair appearing in the picture, can be regarded as having been one of the four cutters which formed the ship's equipment. Why Persano on that fateful day of 20 July 1866 should have taken his place in one of the cutters, rather than a whaleboat or in the gig, is a matter open to speculation, but that day possibly a larger craft was preferred owing to the heavy seas and strong gale which was still blowing from the night before.

It can safely be assumed that the building of this cutter was accomplished either by the same Messrs. W. H. Webb of New York or by some other yard which thrived somewhere off Long Island Sound. She appears as a broad-keel boat, having a fairly sharp entrance, a well-formed hull and buttocks gently flaring off to a square stern. Her sheer is moderate, while her stem is well in harmony with the style prevailing at the time. Details of her construction reveal frames spaced at 12 inches apart and are not bent by steam, but carved out of blocks of oak following the grain of the wood. Moreover, the scarph of the keel and the quantities of knees and angle brackets, which add special strength to the structure, all denote very skillful workmanship. The carvel-built hull, as well as other details of the seats and thwarts, as can be seen in the midship section, show many points of similarity with other types of the United States Navy's standard whaleboats. Her dimensions are as follows: 28 feet 3 inches overall, 6 feet 10 inches beam, and 2 feet 7 inches depth. Her estimated weight is 1,720 lbs., while her displacement at waterline is 2,560 lbs.

The days of graceful, oared whaleboats and smart admiral's gigs seems, however, to be over, for on modern warships, with cramped decks and every inch of space taken up by armament and other necessary equipment, there is only room for short and stubby motorboats which often have to be stowed within the hold itself, tightly squeezed between jeeps and trucks and helicopters, all of which are moved about by elevators and cranes.

In taking off the lines and all details of construction, the author be-

lieves to have accomplished the proper task of preserving and divulging for lovers of the sea and its romance this fine craft which, it is felt, should be regarded as a surviving example of the Nation's fine nautical heritage.

G. B. Rubin de Cervin, officer of the Italian Naval Reserve—B.L. from the University of Rome—comes from seafaring people whose ancestors have served as senior captains in the ships of the Serenessime Republic of Venice. Specialized in naval archaeology and since 1943 *is Curator af the Museo Storico Navale of Venice. His works have been published by* The Mariner's Mirror *and* Rivista Marittima.

Nootka Sound: Winter, 1788-89

BY FRANCIS E. CROSS

THE first American flag vessels to enter the Pacific Ocean were the ship *Columbia* and the sloop *Washington*. They had sailed in company from Boston 1 October 1787. When they arrived off Cape Horn they became separated in a storm. Afterwards, they continued independently on the remainder of the voyage to the Northwest Coast. The first of the two vessels to reach the coast was *Washington,* Captain Robert Gray, who put in at Tillamook Bay, Oregon, on 14 August 1788. Thence Gray coasted northward, stopping occasionally to trade with the Indians for furs. He arrived at Nootka Sound on 17 September. *Columbia,* the flagship, Captain John Kendrick, which had called at Juan Fernandez Island in distress, afterwards continued the voyage direct to Friendly Cove, Nootka Sound. There her small consort had awaited her for the past seven days.

Soon after his arrival, Captain Kendrick issued a change of orders affecting the immediate employment of *Washington*. He cancelled her sailing on a coastwise cruise and directed that she remain in harbor until spring. This decision, however, was not so much due to the approaching winter season with its hard gales and generally inclement weather, as to the desire of the commodore to carry out a plan recently conceived by him: the conversion of the sloop to a brigantine. Now would be a most opportune time, he reasoned, to go ahead with the project.

True *Washington* was overlarge for her sloop rig. As a brigantine, therefore, she should, under most sea conditions, handle easier. But the changeover would be a major undertaking, even for a well-equipped shipyard. In view of which, and the lack of necessary facilities on board, this intended action of Kendrick—which was without the consent of the owners —seems to have been pretentious rather than expedient. Moreover, the task would make a heavy drain on the expedition's stores and equipment, not to mention the effort expended.

The first anniversary of the expedition's departure from Boston was drawing near. The long, arduous, outward voyage, together with the unusual nature of the venture, suggested a celebration. The commodore therefore announced that October 1 would be a holiday. When the day came around, all work on board the two vessels, save routine duties, was suspended. At noon, following the striking of eight bells, a federal salute of thirteen guns (one for each state in the union) was fired on board *Columbia* and repeated by *Washington.* The English trading captain in the harbor, William Douglas, followed with thirteen, of which seven were fired by *Iphigenia Nubiana* and six by the fort.

Commenting on the occasion, Robert Haswell, the second mate of *Washington,*[1] says, in his journal: 'All the officers of each vessel were invited to dine on board the *Columbia* and the remainder of the day was spent in mirth and festivity.'

A few days later, the recently launched English schooner *Northwest America,* Robert Funter, master, was ready to leave on a trial trip up the sound; she was expected to be gone several days. It was planned to barter with the natives for sea otter skins, dried fish and fish oil. An invitation to go along was extended to Captain Kendrick and any two of his officers. The commodore accepted the invitation, but in his place he sent the ship's chief officer, Joseph Ingraham, accompanied by Messrs. Treat and Howe, furrier and clerk respectively.

Meanwhile, Captain Douglas, of *Iphigenia,* was preparing to sail for the Sandwich Islands. Being in need of certain voyage stores and provisions, he managed to obtain the items from Captain Kendrick in exchange for five small cannon. The two captains also agreed on demolishing the combined log house and fort. This decision was probably arrived at through fear that the Indians might be tempted to possess it. The thoroughly dried wood of its construction was therefore divided between the vessels in harbor for use as firewood.

On October 28, *Iphigenia* sailed; and a few days later, *Northwest America.* The orders left by the English expedition's commander, Captain John Meares, of *Felice Adventurer,* directed that the two vessels cruise southward off the coast and call at several designated locations to collect furs, if possible, before finally departing for the Sandwich Islands. There, at one of the harbors—probably Kealakekua Bay, Owhyhee (Hawaii)—Meares expected to await the vessels' arrival and transfer their furs to his ves-

[1] Robert Haswell was then the second mate of *Washington.* He had left Boston as third mate of *Columbia;* at the Cape Verde Islands he was promoted to second mate; and at the Falkland Islands he was transferred to *Washington.*

sel, *Felice,* before he departed for China. He planned for *Iphigenia* and her consort to winter in the islands, but to return to the coast in time for the opening of the next fur trading season.

The departure of the English traders from Nootka left the two American vessels alone on a long stretch of the Pacific coast. In the north, above latitude 60 degrees, on islands off the coast of Alaska, Russian fur traders had long been operating. And to the south, on the California coast, as far as Spain's northernmost settlement at San Francisco, Spanish crown officials and missionaries likewise were engaged, though not so aggressively. Their collections were sent to Acapulco, Mexico, there to be loaded on galleons bound for Manila, whence they were transshipped to Macao.[2]

To the Yankee sailors wintering in Nootka Sound, the change was not only recuperative, but agreeable. In place of their vessels' constant motion at sea, and of daily viewing endless horizons and multifarious cloud patterns, the men's situation was superlatively different. Now their vessels rested on the smooth waters of a quiet cove within a landlocked sound, along whose shores stood dense forests of evergreen. While just beyond, only a short distance away, towered majestic mountain peaks, perenially snow-capped. Yet the mariners, accustomed to the occasional creaking of their vessels' timbers, beams and joints as they rolled and pitched in a seaway, could hardly accustom themselves to the melancholy silences of their primeval surroundings.

As food and water were procurable in rich abundance, the expedition's creature needs were amply supplied. The food consisted of venison, bear meat, duck, geese, salmon and other fish, also a variety of greens, including leeks. A large portion of these commodities were bartered from Indians who came to the cove in canoes, sometimes from long distances up the arms of the Y-shaped sound. Other supplies were provided by the expedition's personnel, many of whom hunted or fished in their spare time.

Frequently spruce beer was had. A recipe for it has come down to us: The author states that the beer was brewed 'by cutting off the tips of various spruce trees cooking them in water, and then to every 40 gallons of this water, adding a quart of malt and 5 or 6 pounds of sugar.'[3] This brew, it is said, made a pleasant drink and generally was accredited a fac-

[2] Joseph Ingraham, *Journal of the Bringantine Hope, 1790-1792* (Manuscript Division, Library of Congress). '. . . it was reported that 3,000 sea otter skins were in the Custom House of Macao which were consigned to the Spanish Company from Manila.'

[3] Heinrich Zimmerman, *Round the World with Captain Cook* (Mannheim: 1781). p. 97. Translated from the German and published by Alexander Turnbull Library, Wellington, New Zealand, 1926. Note: In later years, the spruce beer on board American ships was usually brewed from yeast brought out from home.

tor in preserving the health of the men. The custom of brewing the beer was quite common among 'nor'westmen,' both before and after this time.

Besides his intention to convert *Washington,* Captain Kendrick had in mind other projects which he thought could be readily accomplished during the long winter months. True, in the nearby forests stood an unlimited supply of pine, cedar, spruce and hemlock awaiting the woodman's ax. First on the commodore's agenda was the refit of *Columbia.* But that, after a few days, he abruptly discontinued. Instead, he issued orders which sent most of the hands ashore to fell trees; and the carpenters were put to work just back from the beach, laying the foundation of a general utility house. When completed, this structure was also to be used as a barrack for several of the people of each vessel, in order to relieve the shipboard congestion. The work had not progressed very far, however, when Kendrick suddenly changed his mind, for he had become worried by a discomfiting thought: He feared—and rightly, too—that in event of a sudden determined Indian attack on either of the vessels or the house, or all three simultaneously, the expedition's position would be imperiled, due to the three-way distribution of his comparatively small forces. By discontinuing the work ashore, therefore, Kendrick brought relief, not only to his own immediate worries, but to those of his officers and men.

As certain improvements were urgently needed on board both vessels, the officers waited patiently for such work to begin. The commodore, consenting to a previous request of Captain Gray, gave orders for *Columbia*'s carpenter and his mate to report on board *Washington* to build a new caboose (galley on deck) the present one having been badly battered and its roof leaking beyond repair. This highly necessary work would surely benefit the sloop's men and the general morale as well.

But at the same time, the commodore decided to proceed with the project most dear to him, the conversion of the sloop. So he gave orders for the vessel's partial dismantlement, the first step in carrying out his intention. The work had not advanced far, however, when his officers advised him—most circumspectly, no doubt—that the total amount of spare naval stores and equipment aboard the two vessels unfortunately would not be sufficient to make the changeover, as planned; that the shortages included canvas, rope, blocks, and other indispensable gear. Plainly disappointed and exasperated over this surprising report, and unable on the northwest coast to procure the needed material, Kendrick's most fond hope was suddenly shattered. But he was forced to submit to these provoking circumstances which must govern his actions. Notwithstanding,

he was more determined than ever some day to convert the sloop to a brigantine, and seems to have taken a vow accordingly.

Therefore the work of refitting *Columbia* and of renewing *Washington*'s caboose was resumed. Two weeks later, the weather having become wet and cold, both vessels were partly decked over.

Although *Washington* had proved to be a first-class sea boat, certain defects needed remedying. For instance, her low freeboard, together with no bulwarks, naturally made her very wet in a seaway. But worse than that, she was too easy to board from canoes alongside. Thus in her present employment, this deficiency should be corrected. So Captain Gray made a request to the commodore that bulwarks with gun ports be installed, also that the sloop's armament be increased. These suggested betterments met with Captain Kendrick's approval and he gave his consent to begin the work at once.

Situated at various locations in Nootka Sound, and on the northeast side of Nootka Island, were several small Indian villages. While close by Friendly Cove was the village of Uquot, presided over by Maquinna, head chief of all the tribes around. It was occupied only in summer. This year it had been vacated in September, the population having removed to their winter habitations some three miles up the sound.

Of evident surprise to the Nootka Sound Indians was the intention of the recently arrived white men—already known to the natives as 'Boston men'—to remain in the cove all winter. Heretofore, overseas visitors had come and gone like migrant birds. But, as winter wore on and the vessels did not leave, the natives at length were convinced that what had been told them was true.

On fine days, Indians in canoes came to the cove from as far as thirty miles away. Invariably they brought sea otter and other skins, also bear meat, venison and fish. But, like the natives around Clayoquot Sound, in exchange for the furs they wanted muskets or copper. These items being denied them, they usually accepted the roughly made iron chisels similar to those offered by the English. Chisels were also the medium of exchange for obtaining certain other commodities, such as the useful seal oil. This was an important requirement of whites and red men alike, both for cooking and lighting.

Although the homemade chisels used for bartering purposes were only simple cutting tools, they had many advantages over the primitive tools of the Indians. They were turned out by *Columbia*'s blacksmith and his mate in large quantities. In order to accumulate a backlog of them, forges

were set up on shore; and younger seamen were detailed to assist in the work by burning charcoal.

Three to ten chisels was the price of a sea otter skin. Yet the Indians around Nootka were not entirely satisfied. They continually voiced their need of muskets and copper, preferably the former. They claimed they wanted the muskets for defense against their enemies on the coast; and copper, too, for heading their spears and arrows. Only as a third choice would they accept the so-called chisels or scraps of iron. Occasionally clothing was asked for, and, more often, blankets. An ordinary blanket would buy a good sea otter pelt. The numerous trinkets and odd assortment of trifles loaded on board the vessels at Boston elicited not more than casual interest. Aside from beads and bracelets for personal adornment, only practical things were acceptable. Indeed, at most places on the coast, the Indians proved to be shrewd bargainers. They held out firmly for what they wanted and not infrequently were well rewarded.

The living space for the crews of the vessels being very cramped, an amount of spare gear and equipment was transfered to the shore. There it was placed under the longboat, over which a shed had been built. One dark night, in December, natives in canoes paddled stealthily into the cove. They succeeded in eluding the anchor watch, both aboard ship and sloop, and landed on the beach. They ransacked the contents of the shed and carried off valuable equipment. Included were the five small cannon received from Captain Douglas, also fifteen water casks, besides staves, hoops and others articles. Next morning, when the theft was discovered it was immediately reported to the commodore.

No time was lost in attempting to retrieve the stolen guns and equipment. The longboat was fully manned and armed, and Captain Kendrick, instead of sending a deputy to inquire into the matter, decided to go himself up the sound. Arriving at the nearest Indian village, the local chief was interviewed. Kendrick charged him with responsibility for the theft and demanded immediate return of the articles. But the chief and other head men were so vehement in claiming innocence, and at the same time so insistent that the theft had been committed by their enemies on the far eastern side of the sound, that no action could justifiably be taken against them. Hence the thieves were not apprehended; nor were the stolen goods ever recovered.

Also other incidents occurred during the vessels' long winter at Friendly Cove. These were at least diverting and tended to dispel the monotony of the lonely surroundings. The chronicler, Robert Haswell,[4] tells of a

[4] Frederic W. Howay, *Voyages of the Columbia* (Massachusetts Historical Society, 1941), pp. 54-66.

fire hazard: It seems that a heating contrivance which the commodore had invented, and which he himself had set up in his cabin aboard *Columbia,* 'tho' he had a good brass stove,' failed to function properly. The installation of the device had from time to time been witnessed by the ship's officers who regarded it apprehensively, both from the standpoint of safety and of performance. Thus prepared for unhappy consequences, the after guard were not surprised when, on one cold morning, the sudden loud ringing of *Columbia*'s bell announced the accuracy of their misgivings. Indeed it was only by the instant response of the crews of both vessels to the fire signal that a catastrophe was averted. Even so, the cabin woodwork was badly charred, also the magazine bulkhead; and spare sails stowed against the bulkhead had caught fire and were partly consumed.

It appears that for some reason, two of *Columbia*'s crew had not signed the ship's articles. One of the men, George Munk, had shipped at the Cape Verde Islands; the other, John Green, joined at Nootka. Green formerly was the boatswain of *Felice Adventurer*. Along with other malcontents, he had mutinied. All were overpowered and put ashore in confinement in the log fort. But Green, the ringleader, managed to escape and went in the woods to live. He tried to ship aboard *Washington,* but Captain Gray refused him, for he had promised Captain Meares that he would not employ the man while the English vessels were in harbor. Later, when *Columbia* arrived, Green applied to Captain Kendrick and was given a berth as able seaman. Now, nine weeks later, Green was directed to sign the articles, and Munk also. But upon observing that their monthly pay was less than that of the other able seamen in the crew, both men objected. They contended, says Haswell, that 'it was not Just' and refused to sign. Forthwith Captain Kendrick, apparently angered by the men's refusal, ordered them off the ship. They therefore left at once and soon afterwards were seen in a native canoe heading up the sound.

Everyone aboard seems to have in one way or another tacitly sympathised with Munk and Green. Moreover, their loss obviously would entail more work on the part of the seamen remaining on board. After two or three days, the commodore instituted search for the men, for he decided to have them back. He made a show of force by taking two armed boats up the sound. At the nearest village, he met and queried the local chief, Callicum. The Indian may have purposely withheld, or perhaps was unable to give, the desired information concerning the two crew members; which, together with his apparent disinterest in the matter, evoked the commodore's wrath. Anyhow, he threatened the chief, says

Haswell, 'with his severe displeasure.' The next day, the search was continued by a boat party, well armed, which went far up the main arm of the sound. Toward nightfall, in a native village, one man, Munk, was found and returned to the vessel; he was temporarily confined. His companion, Green, managed to keep in hiding among the Indians for the next two months. He then was glad to give himself up. A few days later, when *Iphigenia* returned from the Sandwich Islands, the commodore turned the man over to Captain Douglas.

Now winter was on the wane and seen everywhere ashore were signs of the approach of spring. The changing season was further manifested by a flotilla of canoes arriving in the cove from up the sound. The native occupants, laden with their possessions, plodded up the hillside to their summer village of Uquot. They were returning to their seaside homes unusually early. Now, too, the Boston men hauled out *Washington* for bottom cleaning and examination, preparatory to departing on a coastwise trading voyage. As for *Columbia*, her refit still was not complete, therefore she must remain in the sound.

The sloop's recently installed bulwarks and gun ports would give Captain Gray and his men better protection than they had had thus far on the voyage. Likewise the increased armament, which now consisted of four carriage guns (6- and 3-pounders) and six swivels, or ten guns in all, should serve as an adequate means of defense in event of Indian hostilities.

By early spring *Washington* was in all respects ready to sail. On board, besides an ample supply of food, water and wood, were one thousand homemade chisels for battering with the Indians for the prized sea otter skins.

Francis E. Cross went to sea in sail, at the age of eighteen. Three years later he changed to steam and so continued for the next forty years, twenty-seven of which were in command of freighters, passenger liners and government vessels. In World War I he commanded a navy transport. He was retired in World War II on account of physical disability. However, for the next five years, he was with the Maritime Commission, in Washington. He is the author of numerous magazine articles on maritime subjects and is presently writing a book Historic Sea Venture *of which this article is one chapter.*

Seagoing Bank Notes with Denominational Masts

BY FRANCIS WHITING HATCH

FOR the summer cruiser east of Rockland (I exempt Mt. Desert of course), the cashing of a personal check may require legwork ashore.

Suppose you are easing into Castine harbor on the last expiring puffs of an afternoon's breeze. At harbor's mouth to starboard you will pass Nautilus Island. Here, in July 1779 Paul Revere supervised the setting up of a battery which lobbed a few futile round shot at Fort George on the heights in the ill-fated Penobscot Expedition. To port, behind the now retired lighthouse you will see clustered the homes of summer residents. Your cruising guide may lead you to an anchorage among small craft in Okum Bay under the lee of the town, or, if you prefer seclusion, you may stand across to Lawrence Bay or Tom Cod Cove where the spicy fragrance of sweet fern and juniper will sweeten the breath of evening.

Wherever you drop anchor leave plenty of scope. For, according to the late George S. Wasson, an unimpeachable authority on this section of Maine, in no harbor along the entire Atlantic coast will you find greater depth. Don't let this disturb you. There is plenty of good holding ground at considerate depths in the coves. Anchorage at Castine has never been a problem for those who earn their living offshore. In its heyday as a salt port, as many as five hundred vessels on a single day have been counted lying here.

If you plan to row ashore in search of lamb chops and ready cash you may find the latter at Dennetts Wharf. Here, Joseph Millard Dennett, representing the third generation of his Yankee family will supply rope to mend your running gear, a codline for tomorrow's fishing, a can of paint, or gas for your kicker if you'll pull alongside. He has tided over many a hard-pressed yachtsman by taking a chance on his check. His bank is a canvas bag stitched together on the sewing machine in his grandfather's sail loft, overhead. From its depths Joe produces bills and small

change and sets you straight as to whether the movie house will be open, and where you can buy your grub.

Had you come ashore in 1816 there would have been no need for man to man banking. Castine had its own bank, up the hill on Main Street in the County Building. In 1815 the town heaved a sigh of relief as the British pulled out after their second occupation. During their unwelcome stay trade had whooped up, despite the heavy levies imposed. On rum for example, practically a household necessity, His Majesty's bookkeepers exacted thirty-eight cents a gallon. On gin and brandy, less popular potables, they hiked the excise to forty-three cents. Despite heavy imposts on all imports and exports, ships heavily laden headed for the seized port. Their cargoes were of considerable value figured in hard dollars of the day. For example, the schooner *Betsy Jane* bound for Castine from St. John was captured by Yankee privateers. Her prize cargo of dry goods was valued at one hundred fifty thousand dollars. A schooner, taken on her way from Halifax yielded forty cases of dry goods, twenty barrels of sugar, and valuable glass and hardware. Cargoes which ran the gauntlet were readily disposed of upriver as far as Bangor and in the growing communities all along the bay and east of Ellsworth.

With the departure of the British, trade continued to expand and small industries sprang up. The need for a local bank was so obvious that ten thousand dollars was quickly subscribed and the Castine Bank came into being. The charter was obtained from Massachusetts. The bank's first president was Daniel Johnstone, Esq., a wealthy citizen who had made his fortune in the shipping trade. His house remains to this day a delight to students of architecture. One of the original Directors was Samuel Austin Whitney, the writer's great-great-grandfather. Captain Whitney was the hero of a rough and tumble experience in 1800. In command and principal owner of the ship *Hiram*, he was twice taken by the French and twice regained his ship in a voyage of one hundred and two days which encompassed Liverpool, Savannah, Bermuda, and finally, British sanctuary in Guadaloupe.

The Castine Bank issued its own notes. A few of these remain in private hands but, according to M. I. Peterson of the Smithsonian Institution these notes have never been described or catalogued. I obtained a complete set from the estate of the late Anna Cate Witherle, the last survivor of a family distinguished in Castine annals. They were engraved from copper plates in black ink on buff stock.

The bills ranged in denomination from one to ten dollars. Appropri-

ately, for a town identified with shipbuilding, the decorations are nautical in flavor.

Sailing across the face of the one-dollar note is a jaunty sloop. She carries a square topsail, perky, and drawing full. In the background are the symbols of a New England port; wharves, a warehouse, village homesteads, and, jutting into the sky, a slender church spire. The sloop has a bluff bow, high stern and a housed-in after deck. In design she shows overtones of French and Dutch influence.

A two-masted schooner embellishes the two-dollar bill. The engraver has retained the harbor scene in the background but has added a settlers' cabin on a point of land in the outer harbor. It is obviously a reworking of the one-dollar scene. Topsails are busy as usual, above the sway-back masts.

Three dollars, three masts of course; a ship, all sails set, heading recklessly, with canvas bulging and taut, for a warehouse dock. The port scene in the background has been wiped out. A vessel is standing out to sea against the horizon, while another is being unloaded at dockside.

With *Thomas W. Lawson* four generations away and mere five-masters unheard of, the artist called it quits. On the five-dollar note he settled for an Indian with his dog on the prowl. In the background a cavern, which would have been dear to the hearts of the Hudson River school, yawns invitingly. The artist appears to have chosen as model for the dog, a Staffordshire greyhound, probably plucked from his mantelpiece. The poor critter is frozen in an uncomfortable crouch preparatory to a leap. The aborigine, muzzle loader in hand, is oblivious to the dog's excitement. With Hollywood savoir faire, mournfully, he looks his public full camera, full in the face. A crumbling old tree at the right is sending out exotic plumage more appropriate to Hawaii than the Bagaduce.

More sober in design is the ten-dollar bill. It is embellished with an overall pattern of type and decoration which includes the Seal of Massachusetts, the promise to pay and a background of parallel lines repeating 'ten dollars' in small script.

After a considerable search, aided by friendly help from the Maine Historical Society, The American Bank Note Company, The Federal Reserve Bank of Boston, The Smithsonian Institution and the Witherle Memorial Library, we finally established the identity of the engraver of the Castine notes. His name, 'REED' appears in small letters at the bottom of each specimen. Miss Marion Eaton of the Radcliffe Library with assistance from the Boston Athenæum, established that this was Abner

Reed, born in East Windsor, Connecticut, in 1771. He appears to have been one of our earliest engravers of bank notes carrying out many commissions for United States and Canadian banks. For a time he resided in Hartford and there executed notes for many Connecticut banks.

In 1830 the Castine Bank was forced to close up with loss, no doubt, to its note and stock holders. Shortly after Maine's separation from Massachusetts, owing to new regulations, banks up and down the coast went under. Among them were The Wiscasset, The Passamaquoddy at Eastport, and kindred institutions in Bath, Bangor, Hallowell and Augusta.

The writer will credit Reed with a weakness for topsails, a sense of humor, and ingenuity to develop 'denominational masts.' At the same time it is our firm belief that if Director Whitney had been given the chance to approve Reed's sketches he never would have passed that ship, with a bone in her teeth, heading slambang for the dock!

Francis Whiting Hatch, New England Manager of Batten, Barton, Durstine & Osborn, Inc., was born in Medford, Massachusetts, and graduated from Harvard in 1919. *He is Vice-President of The Massachusetts Society of the Cincinnati. Through maternal ancestry his roots are deep in Castine, Maine, soil. His father, George Stanley Hatch was a lifelong friend of George S. Wasson (author of* Sailing Days on the Penobscot) *with whom he used to cruise the Maine coast. Wasson's last boat, the sloop* Wavecrest *is now the cherished property of the writer and may be seen on favorable August afternoons, gaff-rigged, on a reach across the Bay to Turtle Head, or running, close in to shore, upriver to Fort Point Light.*

Bank notes of the Castine Bank designed by Abner Reed
From the author's collection

(Upper) Carving on front face of Roman stone coffin in the Ny-Carlsberg Glyptothek in Copenhagen

(Right) Angle photograph of center ship in carving shown above

A Sea Drama in Stone

BY LIONEL CASSON

WHEN you walk the galleries of any European museum of sculpture you are bound to come across some of the elaborate stone coffins in which the wealthier Romans buried their dead. Very likely you will linger to look at the intricate scenes carved on them. But if you are interested in ships and their history there is one in particular, in the Ny-Carlsberg Glyptothek in Copenhagen, that will arrest and hold your attention. The person who was laid to rest in this coffin 1700 odd years ago was a sailor who had died at sea. On the front face of his stone box the coffinmaker carved the dramatic story of how it took place and thereby preserved for posterity the first detailed representation we have —hundreds of years earlier than any other—of a sailing crisis at sea. So carefully has the unknown artist done his work that we today can reconstruct the whole series of events. And so accurate in detail is his portrayal that it proves without question the existence in the ancient world of a type of rig that people have always attributed to a far later age.

Let us turn now to the scene (Plate 12, upper). We are looking into the entrance to a port. On the left is a platform. It probably is part of a structure built up on the end of a long mole which juts out seaward to form one arm of the harbor (Fig. 1). On the right is a lighthouse. Its form —square stages capped by a circular one—is exactly like the representations that have come down to us of the lighthouse for the harbor of Ostia near the mouth of the Tiber. Our scene is thus almost certainly laid at the entrance of this great port which fed Rome, handling thousands of tons of shipping from all over the Mediterranean. We know that at the port of Ostia the lighthouse was set on a small artificial island in the center of the harbor entrance, thereby dividing it in two. Our scene then would show the left-hand channel.

The man—or boy—whose coffin we are dealing with had set out in a tiny boat. It was a windy day and the waves were running high. Right at

the mouth of the harbor he had been thrown out of his frail craft, perhaps in the very sight of his parents standing on the platform at the end of the mole. Two vessels raced to the rescue from inside the port, one slightly ahead of the other. At the critical moment the one in the lead found itself in imminent peril of colliding with a ship that was making its way into the harbor.

It is this moment that the artist has chosen to portray and he has left us enough clues to work out precisely what is happening. The two rescue ships, facing right, are traveling with the wind on the port quarter. The one entering is on a starboard tack. Clearly there is a strong wind blowing for the two square-riggers have shortened sail by hauling up on the brails. The rescue ship in the lead, suddenly finding itself in danger, has

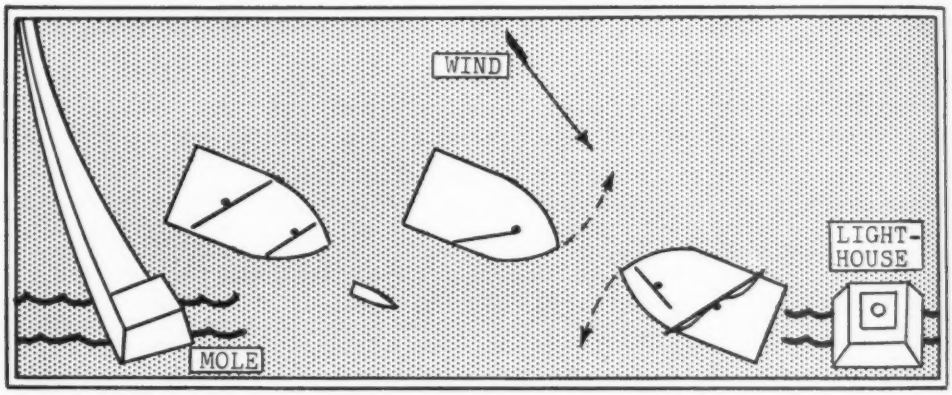


Fig. 1. (The above drawing was kindly prepared by Mr. I. S. Michelman of New York City.)

had to give up any thoughts of rescue. The one behind has taken over that task and one of the crew is leaning anxiously over the bow ready to reach out a hand to the boy in the water. Apparently the boy isn't aware of help from this quarter. His attention is riveted despairingly on the ship nearest him which, confronted by its own peril, can no longer bother with him.

The two vessels in the collision zone are maneuvering desperately to avoid disaster. Both have excellent skippers for they are doing precisely what is called for. On the square-rigger the skipper has backed the mainsail. This will stop his forward motion. The small sail forward, the *artemon* as it was called, is still drawing which will throw his bow to port and carry him past on the outside of the other ship (Fig. 1). Very likely he wants the *artemon* trimmed but he's getting somewhat less than perfect

coöperation: his hand forward has given up in fright, rushed amidships, and settled down to pray.

On the other vessel the skipper is working to bring his bow to port and pass on the inside. This is going to bring him from a broad reach to a close reach and his hands accordingly are busy trimming the sail in. The one forward is probably hauling on the ropes that control the diagonal sprit (we will deal with that in more detail in a moment) to raise the peak and trim the sail flatter. The other has grabbed the leech to help him by reducing the pressure on the sail. Another minute will tell the story. We know that the rescue attempt was unsuccessful; let us hope that at least the collision was avoided.

This scene has another interest besides the dramatic story it tells. It has a significant contribution to make to the history of the sailing ship. Note the rig of the vessel in the center. This is no square rig. If you will look at Plate 12, right, a photograph taken from another angle, you will see immediately its nature. It's a sprit-rig: the sail is supported by a long diagonal spar that runs from tack to peak (the artist has been a bit careless and not shown the lower portion of the sprit where it should pass the bending figure before the mast). The sprit-rig has always been considered a Dutch invention of the fifteenth century A.D. We can now restore credit where credit is due: it is a Mediterranean discovery that predates the later appearance in the north by almost 1200 years. Nor is our picture here merely one isolated example. I have since found it portrayed on at least three other ancient tombstones.

Lionel Casson is an authority on the maritime history of the ancient and medieval world and is an Assistant Professor in the Department of Classics at New York University. He served as an officer in the United States Navy in the Pacific during World War II, and for years has been an enthusiastic amateur sailor on Long Island Sound.

The Sailmakers and Ship Chandlers of 79 Commercial Street, Boston

BY WILLIAM F. KING, JR.

I

I WAS led into writing on this subject because my father, William F. King, is, and his father, William R. King, was before him a ship chandler, and through quite a bit of research I have found very little written on the subject. I have always been rather curious to know the history of the family firm of Harrington, King & Co., but I was stumped for any concrete information because I found that the records before 1943 had been destroyed. One of the men in the store, however, did remember an old chest in the loft which he thought contained some old papers, although he had no idea of their contents. The chest, it turned out, contained the bills, ledgers, and other papers of the George Matthews Co., a sailmaking firm which had occupied this loft for twenty-five years, and had been in business for more than fifty years before 1907. From these papers and with the help of my father, and of my grandfather who started work for J. Baker & Co. in 1881 as a clerk, became a salesman in 1886, and bought out J. Baker in 1898, I have compiled the following paper.

II

Somewhere in the neighborhood of the year 1854, a sailmaking firm named Rhoades & Matthews was founded in Boston. The business was first established in a loft at No. 10-12 City Wharf. These quarters were rented of Hart, Baldwin & Batume, the street-floor meat dealers, for $325 a year. The first transaction of which there is record is a bill dated May 1854, paid to Fearing, Thacher & Whiton, a famous old Boston firm, who dealt mostly in cotton duck.[1] The account of Rhoades & Matthews is backed on this note by Howes & Crowell, a shipping outfit whose

[1] From the earliest bills found in the papers of the George Matthews Co. discovered in the loft of Harrington, King & Co., 79 Commercial St., Boston, 23 April 1953. Bills marked 1854-55.

ships traveled to the four corners of the globe. One of the founders, Osborn Howes, was the first American sea captain to land in Turkey.[2]

If the firm was founded in 1854, it certainly got off to a good start, for from 1 June to 17 December, $4,028.88 worth of goods was bought from Fearing, Thacher & Whiton. The company's carter, C. P. Wild, was carrying between seven and twenty loads of sails a month to and from ships on the ferries or to places of departure. One must not forget that the business done with Fearing, etc., was only in cotton duck, and that the sailmakers had bills upwards of $836 with some thirteen other supply houses in Boston in 1855.

Early in 1856, Rhoades & Matthews rented for $500 a year another loft at 63 Commercial Street from the downstairs ship chandlers, Ryder & Hardy. Through the latter firm, they acquired on 16 September two sixty-fourths interest in the bark *Belle,* for which they supplied a suit of sails worth $1,018.93 as payment for the shares, which were worth $997.26. Cash covered the balance of the cost of the sails.[3]

The sailmaking business appears to have been more active in 1856 than in the previous year if the number of bills are any evidence. It will be well to remember that the United States was at the height of its shipping and shipbuilding career in 1854, and remained close to this peak until the Civil War. These were clipper days and the days of great shipbuilders like Donald McKay, but the last clippers were built in 1854. There were twenty of them, and ten were built in Boston.[4] The great California-China trade lasted till 1860, but by 1855, San Francisco had been flooded with merchandise.[5] Also, owners were fast finding their clippers too expensive to operate. A large part of the tremendous cost of upkeep went into the pockets of the sailmakers, for the clippers carried so much sail. They were in constant need of repair, for the emphasis was on speed in these ships, and, consequently, they were always losing parts of their very extensive rigging.[6] These factors were definite aids to the success of sailmakers such as Rhoades & Matthews.

Among the early entries in the firm's books appears the name of the clipper *Stag Hound,* for which the firm sold some old sails on 8 March 1858 for $85.60. Then, on 20 March, Rhoades & Matthews were paid $341.21 for sail work delivered to *Stag Hound* by C. P. Wild, carter, on

[2] Writer's Program of Massachusetts, *Boston Looks Seaward* (Boston: Bruce Humphries, Inc., 1941), p. 95.

[3] George Matthews & Co., Bills marked 1856.

[4] Writer's Program, op. cit., p. 144.

[5] Ibid.

[6] Ibid.

1 February, for the charge of 75 cents.[7] *Stag Hound* was the first of Donald McKay's great clippers. She weighed 1,535 tons, was 215 feet long, and had a mast that rose 88 feet above the deck. She carried 8,000 yards of canvas.[8] That is approximately the area of one and a half football fields. This was a tremendous amount of canvas to have all in good condition at one time, and hence it is obvious why sailmakers were so prosperous during this period. *Stag Hound* nevertheless managed to earn $80,000 over construction costs on her maiden voyage in early 1851, but there would not always be as profitable a market as San Francisco was then.[9]

Also among the entries for this year was the bark *Azor,* which was supposedly one of Boston's favorite ships, under the command of Edmund Burke, 'the most popular Boston sea captain in the Azores—who left a trail of fast voyages and much affection ashore.'[10] There is good evidence for this statement in the number of entries in the records, for his sails seemed to be in constant need of repair. As a matter of fact, he was Rhoades & Matthews' most regular customer at this time.

In 1858, the firm was joined by E. B. Matthews, George's brother. In that year, the company did $16,678.12 worth of business with a profit of $2,393.93.[11] In 1859, the name of Samuel Rhoades disappears from the records. Business was better this year, and the figures continued to increase up to the Civil War.

In 1861 and 1862, the sailmakers handled fabulous amounts of money for a small business in those days. It appears that Matthews had been given contracts by various firms to make tents for the Army. The evidence of this is found in orders for large numbers of tent buttons and large quantities of tent duck. There were also a number of small orders for flags. One payment to Fearing & Thacher covered $10,437.70 worth of duck, and another payment to J. W. Page & Co., who carried large amounts of army duck, was for $44,283.44 on 19 December 1862. An earlier dealing with Page shows evidence that Page probably sublet an army tent contract to Matthews, with Page supplying the canvas—for there is a $450 payment received from the U. S. Government through Page. At this time, the average cost of canvas was 33 cents a yard, and at that rate, Matthews would have bought approximately 32,000 yards from Fearing & Thacher, and close to 130,000 yards from Page. That is a tremendous amount of canvas, even by modern standards. At the same

[7] George Matthews & Co., First ledger marked 1857-63.
[8] Writer's Program, op. cit., p. 131.
[9] Ibid., p. 144.
[10] Ibid., p. 118.
[11] George Matthews & Co., Ledger marked 1857-63.

time, let us glance at some of the other figures available to us. Labor for the month of September, 1861, cost George Matthews $6,508. At his average wage of 25 cents an hour, that would mean that one hundred men would have to work ten hours a day six days a week to earn this amount. Most of this work appears to have been hired out to other sailmakers, such as Thomas Hoyt & Co. and George Kingman & Co., who was paid for labor on duck that he supplied.

From August to October of 1861, A. L. Haskell did $6,885 worth of business with Matthews. He appears to have been making tents or bedding (since he was a manufacturer of bedding) for the government, for he later sold to Matthews 4,428 tent buttons. In a similar period in later 1861, Pierce Bros. Co., dealers in duck and webbing, paid Matthews a total of $9,914.14. Then, most spectacular of all, in September 1862, Colonel D. H. Vinton, possibly the Boston Quartermaster, starts payment on a direct government contract which Matthews had been working on, and by December the firm had collected $114,500. Thus in 1862, $129,442.96 worth of business was done and the firm gained a profit of $43,100.78, unbelievable in those days, especially in the sailmaking business. Needless to say, it was never again quite so lucrative. It is interesting to note that the greatest prosperity in the canvas business has always been during wartime, and, as shown above, this is not always dependent on the amount of shipping there is.

Skipping to the year 1875, the beginning of the period of the great domestic coastwise schooner trade, we find that the George Matthews Co. has rented the loft over J. Baker & Co. at 79-81 Commercial Street. Here the firm remained until the death of its owners. They had moved here from 87-89 Commercial Street where in 1873 they had taken a loft over N. Boynton, the agents of the famous Russell Mills cotton duck, who supplied Matthews for many years.[12] J. Baker & Co. were ship chandlers and grocers who had moved into 79 Commercial Street in the early 1860's, the company having been established in 1844 at 49 Commercial.[13] The building itself was built in 1854 to house merchants such as ship chandlers and ship brokers. At that time, the building backed up on the water, but in the 1860's this area was filled in and Atlantic Avenue was built between it and the docks.[14] Commercial Street, however, retained its share of the shipping business, for in 1869, of thirty-

[12] Ibid., Ledger marked 1868-78. Ledger for years 1863-67 is missing. Also used here Bills marked 1873 and 1875.

[13] Boston Almanac of 1850.

[14] Writer's Program, op. cit., p. 151.

three ship chandlers in Boston, twenty-three were on Commercial Street, along with eleven ship brokers.[15]

The building itself is seven floors high counting the basement. The street floor accommodates an office on Commercial Street, and in back a shipping room with a large door, which was by 1875 on another street but originally faced on the docks. A hoist in one corner of the shipping room could haul stores to all seven floors. In those days, the ground-floor walls were lined with bins of beans and shelves of canned goods.[16] These were the groceries with which J. Baker & Co. outfitted their own ships and any others which wished to be so supplied. A ship chandler's job was then, and is even more so today, one of purchasing and assembling. A vessel would come into port and want to be outfitted for the next voyage. A ship chandler tried to supply her as nearly as possible with everything she would require. Fritz Redlick in his 'Some Remarks on the Business of a New York Ship Chandler in the 1810s' divides the stock carried by a chandler into eight groups:[17]

1. Naval Stores—rosin turps, oils, paint, lard oils etc.
2. Twine, hemp, bolt rope, ratline, cordage, spun yarn etc.
3. Duck of all sorts and thread sizes.
4. Tools—Nautical instruments, sailmakers equipment, carpenter's tools, brooms, candles etc.
5. Kitchen utensils.
6. Leather goods such as pumps, chaffing gear etc.
7. Sheet paper, cartridge sheathing, log books etc.
8. Sheet lead, copper, chain, anchors etc.

They also were money loaners, manufacturers, and, as J. Baker was, ship's grocers. Baker had on hand most of the goods in this list, and kept them stored in the basement and the other five floors below the loft.

The loft took full advantage of the steep roof. At the highest point, it is fifty feet above the floor, which is about one hundred feet in length and about thirty in width. The roof comes down to within eight feet of the floor at either end wall. Every foot of the height was needed, for this is where the sailmakers bent and stretched the new sails. The block and falls, which were used to haul up the sails, are still hanging from the roof. About thirty-five feet above the floor on one wall is a platform from which a man could work.

15 Boston Commercial Directory of 1869.

16 From account of Mr. William R. King, retired senior partner of Harrington, King & Co.

17 *Bulletin of the Business Historical Society* (University Press, Cambridge), XVI, No. 5, Nov. 1942, p. 94.

Matthews conducted his business in quite an orderly and interesting fashion. He kept a record of each sail made in a little 2″ x 3″ card, which was kept in an envelope with the name of the ship on it.[18] Every time there was a change to be made, the sailmaker would make out a new card for the particular sail or other article. If someone wanted a sail, a hatch cover, an awning or a new lifeboat cover, Matthews or one of his men would go out to the ship and take the necessary measurements, record them on one of these cards, and bring them back to the loft. Then a sail plan or 'draft' as it was called would be drawn. An example of this is the case of the British steamship *Belgian King*,[18] which placed an order for various sized hatch covers, two bridge cloths, three boat covers, two 'dodgers' to keep the water off the bridge, three oil bags, one mast coat, and sails for two lifeboats. All the dimensions of these were put on cards with the gauge of the canvas to be used and any preference as to the manufacture (i.e., Old Colony or Woodbury Mills), and then a draft was drawn for each item. This is the type of comment written on these cards to insure against future mistakes: 'Bark *Elmiranda,* March 1901.[18] Foresail 3 foot to much drop and two foot to long on head. Upper topsail 3 foot short on hoist.' Then in red ink, 'Look out for sails when we make any more.'

From an inventory taken on 1 January 1885 we get a good idea of the equipment that a sailmaker used and the stock he kept on hand.

Russia rope	539 lbs.
Manilla "	933 "
Trawl line	18 "
Clews	818 "
Ring Clews	261 "
Sister Hooks	42 "
Twine	124 lbs.
Leather	$18.00
Oblong Rings, Grumetts	
Old Sails	3,522 lbs.
Hoisting Machine, Winches	
4¾″ Thimbles	32 lbs.
4 in. "	90 "
3¼ in. "	117 "
3 in. "	142 "
2¾ in. "	217 "
2½ in. "	208 "
Lizard Thimbles	450 "
Lip "	29 "

[18] George Matthews & Co., From cards and drafts found.

	Brass "								20 "
	72 Doz. Fids								
	Bullseyes 2½ in.								245 "
	Bees wax								305 "
	Sail Wax								320 "
	Paraphine								60 "
	Rosin								416 "
	Duck—Number of yards								
	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
	77	61	102	27	47½	37	93	92	74
	Etc. ———————								
Total	831	167	204	27	484	170	517	172	74

For the good of their business, all merchants and people who relied on sailing vessels for their living invested in ships. The purpose of this was to get the business of outfitting the ship with their specific type of goods. In the case of Matthews, by buying shares in a ship, he would assure himself of the business of making her sails, while J. Baker & Co., who might also own shares, would outfit her with almost everything else. Each ship was divided into sixty-four shares, and most companies bought as few shares as they could get away with and still be sure of obtaining her business. The preferred procedure was to buy into a ship while she was still on the ways—in this way a firm like Matthews could make all the new sails.[18] This was the case in the investment in the bark *Belle* mentioned earlier. If a company wished to use a ship for its own purposes, it would buy as many shares as was necessary to get control of her. J. Baker in 1881 was interested in some ninety ships, a small number of which it owned outright. Before 1880, the business affairs of most schooners were run by the captain, but as this type of operation became big business, the captains became merely hired hands at $45 or $50 a month with about five per cent of the gross return from a trip.[19]

Among the Matthews Co. papers, there are some twenty-six payments for pieces of ships, of which he bought anywhere from 1/64 to 3/32 or six shares in a ship. The prices vary from $132.81 which was paid for 1/64 of the schooner *Jennie Martin* in 1872, to $1,062.50 paid for 1/32 of a new schooner being built in Bath, Maine, by D. O. Blaisdell in 1880. There are other things involved here, too, such as a receipt dated 1 November 1875: 'Received of George Matthews Co. forty-six dollars and nine cents on account assessment on owners of Schooner *H. P. Blaisdell.*' Later there was another assessment for services on this same vessel. This

[19] Writer's Program, op. cit., p. 164.

was the gamble of owning shares in these ships, for it was not always that one would receive x 'dollars on account of the earnings of Schooner Such and Such.' Matthews himself appears to have been agent along with John Rich, an old supplier of his, for the schooners *Kate M. Hilton* and *Roger Drury*.[20]

Among the Matthews papers were all the bills of the schooner *D. & E. Kelley* for the year 1874.[21] It is probable that the firm were agents for this boat. She appears to have been a good-sized schooner running up and down the eastern coast in a tramp fashion, her course dependent only on the next cargo. The process was, as usual, to carry lumber, stone, and ice south in exchange for coal and cotton. There is no evidence that *D. & E.* ever traded in cotton, but she did carry most of the other items. It appears that she was inactive from January till April 1874. Between 11 and 14 April the ship smiths and caulkers were getting her in condition for a voyage, while the chandler, Hinckley Bros., outfitted her. On 16 April she was towed out from the National Pier by the tug *Joe Burk* to the 'stream' and in four days she was in New York. She was there met by the 'propeller,' *Sam T. Christian*, which towed her to the foot of Gould Street in Brooklyn. On the 22nd, the 'propeller,' *Matt White,* towed her to Hoboken. On the 28th, *G. F. Von Beer* towed her out from the docks and she sailed to a coal-loading dock where she took on a load of 303 tons of coal brought from the Delaware, Lackawanna & Western Rail Road Co. at Hoboken. The load consisted of 101 tons of egg coal and 202 tons of stove coal. On the 29th of the month, Captain David A. Phillips picked up his pilot, Benjamin Sprague, Jr., and for a fee of 62½ cents a foot of draw, his ship drawing ten feet, and the ten dollars for a tow, he was taken out to Rackers Island, and left on his own. On 7 May they discharged the coal in Boston. New supplies were picked up and on the 8th the schooner was headed seaward again. Phillips stopped in his home port of Dennis, Massachusetts, on the 9th, but they were in New York within two days. They picked up another 300 tons of coal from A. Pardee & Co. in Jersey City on the 15th. The tug and pilot arrangements were much the same as before, so I will not go through them again, as also with the reloading operations. On 21 May they returned to Boston, collected stores from Hinckley Bros., and on the 25th unloaded their coal on the Old Colony Railroad pier. Two days later finds the schooner in the Kennebec River picking up 250 tons of ice. Leaving there 1 June,

[20] George Matthews & Co., Receipts for shares 1872-84.

[21] Ibid. This account was compiled wholly from the date sequence of bills and receipts and is quite subject to error.

they are in New York by the 10th, where, after three days wharfage at Bank and Bethune Streets, they get a berth at the Knickerbocker Ice Co. on 20th Street. Then the ship brokers, Cox & Green, get them a new cargo, so on 17 June, they are towed up the Hudson to Roundout, one of the terminals of the old Delaware & Hudson Canal Co. near Newburgh, where they pick up 306 tons of Lackawanna coal from the Delaware Hudson Coal Co. for $1.50 a ton. By 19 June, *D. & E. Kelley* was out of New York and once again in Boston on the 24th. On the 27th, the coal was delivered to George M. Winslow Co. at 220 Causeway Street. On the 30th, the schooner was put in a dry-dock run by Timothy Barry, where she was cleaned and painted. The 14th of August saw her taking on 150 tons of logwood for Providence and another 150 tons probably for New York. She seems to have left Boston on the 20th and reached Providence on the 22nd, when she was towed in to dock. On the 23rd, the ship was in New York once more. On 26 August a load of 312 tons of coal was taken on at Hoboken from Meeker & Deen Co. By the 27th, they were once again headed east, and on 3 September sailed into Fall River, were towed to Somerset, and there discharged cargo with the Old Colony Railroad for $78. Two days later, the schooner was back in New York. On 10 September, she was towed from the area of the Battery to Port Johnston, New Jersey, where she was loaded with 303 tons of coal intended for the Boston & Maine R. R. from the Wilkes-Barre Coal Co. On the 17th, *D. & E. Kelley* was in Boston, having left New York on the 14th. On the 23rd she unloaded, and then on the 24th she was off again. On the 26th she picked up 507 feet of hemlock at Rockport, Massachusetts. There is no evidence as to where this was to be discharged, but it seems probable that it was at Pigeon Cove, above Gloucester, since there is evidence that on 30 September she took aboard at that place 112 tons of small stone and 152 tons of large stone bound for Cross Ledge in Delaware Bay. On reaching Cross Ledge, 12 October, the ship was ordered to 'Bombayhook' by an officer of the Light Boat at that point. Captain Phillips filed a protest, 19 October, 'against the loss, by the delay, by the Consignee refusing to endorse his Bill of Lading.' On 4 November, the schooner was towed from Chester to the Navy Yard in Philadelphia and thence on the 5th to Pier 20 at Port Richmond, Philadelphia, where she was loaded with 291 tons of coal. On the 7th or thereabouts, she headed down the Delaware River and then north. On the 18th she entered Narragansett Bay, and docked at Providence the next day. There are no further bills except for one on 31 December for a pump, but it is probable that *D. & E. Kelley* sailed for home around 20 November and

docked for the winter. This account is long and somewhat involved, but it is very interesting as a clear picture of the coasting trade.

Between the years 1881 and 1898, J. Baker & Co. gradually lost some of its financial standing. In 1881, as I mentioned before, the firm was interested in more than ninety vessels. By 1898, there were only twelve left in the fleet. *Boston Looks Seaward,* put out by the Writer's Program of Massachusetts, makes the disastrous Portland Storm of 26 and 27 November 1898 partly to blame, for in this storm, J. Baker & Co. lost seventeen ships.[22] But that is not the main reason why, at this time, Frank Harrington, a junior partner, and William R. King, a salesman of the firm, were able to buy out J. Baker. According to the latter, who is now ninety years of age, J. Baker, the senior partner of the firm, had been speculating with the President of Tufts in various enterprises such as marble quarries. Baker had been buying stock in these various schemes with the company's money until he had weakened considerably its financial position. Finally, the two younger men were able to raise enough money to buy what was left of the business in June or July 1898, but it was a long time before Mr. Harrington was able to stop worrying over the firm's financial standing. J. Baker disappeared at this time and was never seen again, although one of the firm's captains claimed that on one of his trips to South America he saw him working in a grocery store a number of years later. There is evidence that this shake-up caused some anxiety upstairs, for George Matthews went to his lawyer concerning claims he had against J. Baker.

After the reorganization, the firm usually had in operation at one time no more than twelve schooners. Sailing vessels were on their way out anyway, although they hung on until the end of World War I or shortly thereafter, when they were replaced by steam and cheaper modes of freight transportation. Mr. King recalls that they became a nuisance after awhile, for it was such a tedious job to keep them all furnished with groceries and other things which would not have been stocked otherwise. Although the firm did keep groceries in stock for their own ships, they gave up selling them generally in 1898. The captains became a nuisance also, as they would come in and sit around all day, eating up the groceries, according to Mr. King. Old Captain Jim Snow of *Woodard Abrams,* built for the firm in Waldoboro, Maine, would always come in drunk, and never failed to kick over the coal bucket beside the Franklin stove. Then there was Captain Siras Kent of *Frank Harrington,* who always wore a silk topper and a Prince Albert coat whenever he was ashore.

[22] Writer's Program, op. cit., p. 153.

In 1902, the books of the George Matthews Co. end. Business was comparatively small, that is, somewhere around $10,000 worth was handled in a year. The Matthews brothers were getting old and probably not able to do as much work as they had done in previous years. There are signs of the profits of good years past in these books, for there are on the average two or three 'earning' payments from schooners the firm has invested in every month. They are not large usually, being about $10, but it shows a sizable accumulation of capital.[23] Sometime shortly after 1907, both E. B. and George Matthews died, and the loft at 81 Commercial Street was never again used by sailmakers. The age of sail was dying and those who had stuck with it would also die.

Today there are none of the original ship chandlers engaged in that enterprise in Boston. Harrington, King & Co. and J. Bliss & Co. are about the only former ship chandlers still in business, and although they still use that title, they technically are no longer ship chandlers, for they do not concern themselves with supplying vessels with every needed item. Early in the twentieth century, Harrington, King & Co. started a shift towards boat yards as their main markets for sales. Their assortment of goods was not so large from this time on. Their main items are today cotton duck and awning stripe, cordage from Plymouth and Columbian Rope Companies, steel wire, chain, yacht paints, oars and paddles, and metal yacht fixtures from anchors to chocks. These are sold to large shipbuilders such as Bethlehem of Quincy, and small boat yards such as Tracy's at Neponset, the old George Lawley yard. Other big buyers are awning and tent outfits, and the government buying for the Army and Navy.[24]

The business has prospered under this policy. Not very long ago the firm was able to buy out its chief competitor, Hall, Lincoln Co., which acted as agent for the Russell Mills. Mr. King says that when J. Baker & Co. were in business, they never did more than $125,000 worth of business in a year, but he has seen the day when Harrington, King & Co. has done two million dollars worth in a year. This was done on government contracts in wartime. Mr. King retired on 1 January 1950 at the age of eighty-eight, and the firm is now carried on by William F. King, his son, and one other partner, D. Kenneth Dunmore.

The only real ship chandlers left today are merely agents and assemblers, who go out to a freighter or other vessel, find out what she needs, and then come ashore to purchase the required items from various con-

[23] George Matthews & Co., Ledger marked 1888-1902.

[24] From the account of Mr. William F. King.

cerns like Harrington, King & Co. As for sailmakers, they are few and far between, and are mostly large machine manufacturers like Ratsey of New York and Manchester of South Dartmouth.

The building at 79-81 Commercial Street has been in the same business basically and the same hands for almost a century now, only because it was able to adapt itself to the death of its most romantic era—the age of sail.

William Fuller King, Jr., was born in West Newton, Massachusetts, on 20 January 1932, the son of William Fuller King and Mary Proctor King. He was educated at the Fessenden School and Phillips Academy, Andover, and graduated from Harvard in 1954. He is now in the Army and is stationed at present at Fort Sill, Oklahoma.

Documents

Protest.
The Wreck of the Schooner *Charles W. Waterbury*

Sworn statement of the wreck of the Schooner *Charles W. Waterbury*. State of North Carolina, Carteret County. Port of Ocracoke, 22nd. December, 1857.

This day personally appeared before me, Samuel Dudley, Notary Public;— William W. Cook and makes oath that he is the Master of the Schooner *Charles W. Waterbury* of New York, burthen about 307 tons, that he loaded the said schooner at Barrel Stake, Franklin Port, in the State of Louisiana, with sugar and molasses and sailed from thence on the first day of December 1857 at 11 o'clock at night, harbour time, wind fair, bound for New York. The second day out, said schooner began to leak and the leak grew worse and the last week she leaked 100 (gallons) an hour. That on Monday the 21st. instant, wind E. to S.E. blowing fresh, weather thick and rainy. At half past 6 o'clock P.M. the same day he judged he was off against Cape Hatteras —wind blowing a gale from S.E. and rain, that he run a N.E. course until 8 o'clock, then steered North and at 10 o'clock the same night the 22nd. instant said schooner struck in the breakers about 10 miles S.W. of Ocracoke Bar, N. E. wind blowing very heavy, weather thick with rain, where said schooner is now stranded with about 3 feet of water in her hold.

Therefore the said William W. Cook, protests against winds, weather, storms, gales, waves, breakers, shoals, bars, reefs, beaches, etc.

Sworn to before me the day and year above written.

(Signed) Saml Dudley.
Notary Public.

Contributed by E. Lee Dorsett, M.D.

Benjamin King, Instrument Maker

Benjamin King, mathematical instrument maker, was born in Salem in 1740. He learned his trade from his father, Daniel King, and by 1775 was engraving his name on instruments of his own manufacture as evidenced by a Davis quadrant in the collections of the Peabody Museum dated in that year. Mr. King died in Salem 26 December 1804. The Peabody Museum has the above-mentioned Davis quadrant and three compasses from this maker.

An inventory of the Estate of Mr. Benjamin King, late of Salem in the County of Essex, Mathematical Instrument Maker, Deceased, ...

3	Quadrants	$36.00
1	ditto	16.00
50	Compass covers	.50
16	lb old brass	2.70
62½	lbs old brass	12.50
	a sett of types	3.00
	a Lot of Mathematical Instrument Makers Tools	7.00
13	old Compass boxes	.50
2	old cases	1.00
30	Compass cards	.75
	a lott of New Brass work	2.00
	a lott of wire	.50
	Surveying Instruments	8.00
6	Brass Kittles	1.50
1	pr Steelyards	.25
	Sundry pieces of steele	1.50
1	Magnifying Glass	.50
1	Slate	.06
2	Vises	1.75
2	Anvils	2.50
	Shears	2.00
	Bench	.25
	Shelves	.50
3	Brass Compasses	9.00
7	Wooden ditto	18.75
	piece of Tin Foil	.75
1	Loadstone	20.00
7	Compass Vanes	.75
	* * *	
24	Compass boxes	3.00
	Old iron	6.00
	* * *	

Salem January 22, 1805
/s/ Joseph Henfield
/s/ William Lang
/s/ John Punchard

Contributed by Charles H. P. Copeland

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BY ROBERT GREENHALGH ALBION

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Abbreviations: *D&HA, Dock and Harbour Authority; MCF, Maine Coast Fisherman; NRLQ, Naval Research Logistics Quarterly; RUSI, Journal of the Royal United Service Institution* (previously designated as 'United Service'); *S&S, Ships and the Sea; S&SR, ID&E, Shipbuilding and Shipping Record, International Design & Equipment Number, 1955; SBF, Steamboat Bill of Facts; USNIP, United States Naval Institute Proceedings; USNWR, United States News & World Report.*

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